

**1. General information****Course:** ALGEBRA**Type:** BASIC**Degree:** 360 - UNDERGRAD. IN INDUSTRIAL ELECTRONICS AND AUTOMAT. ENGINEERING (TO)**Center:** 303 - E.DE INGENIERÍA INDUSTRIAL Y AEROSPOACIAL DE TOLEDO**Year:** 1**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 56300**ECTS credits:** 6**Academic year:** 2022-23**Group(s):** 40 41**Duration:** First semester**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** MARIA FUENSANTA ANDRES ABELLAN - Group(s): 41

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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
A01	To understand and have knowledge in an area of study that moves on from the general education attained at secondary level and usually found at a level that, while supported in advanced text books, also includes some aspects that include knowledge found at the cutting edge of the field of study.
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.
A03	To have the capability to gather and interpret relevant data (normally within the area of study) to make judgements that include a reflection on themes of a social, scientific or ethical nature.
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.
A17	Ability to apply principles and methods of quality control.
B01	Ability to solve mathematical problems that occur in engineering. Aptitude to apply knowledge of: linear algebra; geometry; differential geometry; differential and integral calculus; differential and partial differential equations; numerical methods; numerical algorithms; statistics and optimization.

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

To know the theory of matrices and determinants and to know how to carry out the corresponding calculations. Know the fundamentals and applications of Lineal Algebra and Euclidean Geometry

Be able to express yourself correctly both orally and in writing, and, in particular, to know how to use mathematical language to express with precision quantities and operations that appear in industrial engineering. Become accustomed to working in a team and behaving respectfully.

To know how to use and carry out elementary operations with complex numbers.

**Additional outcomes**

## 6. Units / Contents

Unit 1:  
Unit 2:  
Unit 3:  
Unit 4:  
Unit 5:  
Unit 6:  
Unit 7:  
Unit 8:  
Unit 9:

## 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	A01 A08 A12 B01	1	25	N	-	
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	A02 A08 A13 A17 B01	0.6	15	N	-	
Computer room practice [ON-SITE]	Problem solving and exercises	A02 A07 A08 A13 A17 B01	0.48	12	N	-	
Individual tutoring sessions [ON-SITE]	Guided or supervised work	A02 A08	0.08	2	N	-	
Study and Exam Preparation [OFF-SITE]	Self-study	A01 A02 A03 A12 A13 B01	3.6	90	N	-	
Progress test [ON-SITE]	Assessment tests	A01 A02 A03 A07 A08 A12 A13 A17 B01	0.12	3	Y	N	
Final test [ON-SITE]	Assessment tests	A01 A02 A03 A07 A08 A12 A13 A17 B01	0.12	3	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
Progress Tests	0.00%	10.00%	
Final test	0.00%	90.00%	
<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

## 10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Friedberg, S. H.; Insel, A. J.; Spence, L. E.	Linear Algebra, 4th Ed.	Pearson		978-0130084514	2003	
García, A y otros	Cálculo	CLAGSA				Recomendado para el tema 1
Kolman, B	Algebra lineal con aplicaciones y Matlab	Prentice Hall				Bibliografía complementaria
Larson y otros	Algebra Lineal	Pirámide		84-368-1878-4	2004	Bibliografía complementaria
Merino, L. Santos E	Algebra Lineal con Métodos Elementales	Thomson		84-9732-481-1	2006	Interesante exposición teórica
Rojo, J	Algebra lineal. 2ª Edición	Mac Graw-Hill		978-84-481-5635-0	2007	Bibliografía complementaria
Rojo, J. Marín I	Ejercicios y problemas de álgebra lineal	Mac Graw-Hill		84-481-1889-8	1994	Bibliografía complementaria
Villa, A de la	Problemas de Algebra	CLAGSA		84-605-0390-9	1998	Libro de problemas recomendado

Fernández, C y otros	Ecuaciones diferenciales y en diferencias	Thomson	84-9732-198-7	2003	Recomendado para el tema 9 Libro de problemas recomendado
Arsevú, J y otros	Problemas resueltos de álgebra lineal.	Thomson	84-9732-284-3	2005	
Bretscher, O	Linear Algebra with Applications, 5th Ed.	Pearson	978-0321796943	2012	
Burgos, J de	Algebra Lineal	Mac Graw-Hill	84-481-0134-0	1993	Clara exposición teórica con una gran cantidad de ejemplos y problemas.