SUBJECT TEACHING GUIDE

G414 - Algebra and Geometry

Degree in Industrial Technologies Engineering

Academic year 2016-2017

1. IDENTIFYING DATA					
Degree	Degree in Industrial Technologies Engineering			Type and Year	Core. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	First Year Subjects Subject Area: Mathematics Basic Training Module				
Course unit title and code	G414 - Algebra and Geometry				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICA APLICADA Y CIENCIAS DE LA COMPUTACION
Name of lecturer	LAURA MARIA BRAVO SANCHEZ
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Other lecturers	NEILA EMMA CAMPOS GONZALEZ

3.1 LEARNING OUTCOMES

- Solve mathematical problems in the field of engineering.
  Apply the methods of algebra and geometry, as well as algebraic and numerical methods for solving problems in Industrial Engineer

4. OBJECTIVES

Provide the knowledge and use of the rules of linear algebra and geometry as well as their properties and applications, with particular emphasis on its relationship with algebraic resolution numerical techniques.

6. COURSE ORGANIZATION

CONTENTS	
1	1.- LINEAR SYSTEMS EQUATIONS AND MATRICES . Classification. Equivalent systems . Elementary matrices . Row echelon form . Rank. LU factorization . Linear equations numerical solution systems.
2	2.- VECTOR SPACES. Definition. Subspace. Linear independence and linear dependence . Bases and Dimension. Euclidean vector space : Scalar product. Orthogonal and orthonormal bases . QR factorization. Orthogonal projection . Least-squares fit . Applications .
3	3.- LINEAR APPLICATIONS . Definition. Properties. Kernel and image. Orthogonal transformations . Similarity transformations . Eigenvalues and eigenvectors . Diagonalization .

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
It will consist of a theoretical part (40 %) and problems solved with Matlab (60 %) It will be held at week of March 22, 2017 It will last two hours.	Written exam	No	Yes	50,00
It will consist of a theoretical part (40 %) and problems solved with Matlab (60 %) It will be held at week of Mai 25, 2017 It will last two hours.	Written exam	No	Yes	50,00
TOTAL				100,00

Observations
Perform the two partial tests , obtaining in total 10 or more points , not being any lower than 3 Students who have approved partial tests have passed the course. Others may retrieving them in the final exam in June , the date set by the school.
Observations for part-time students
Part-time students will have to opt for the final exam , constituting this 100% of the final grade

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Carl D. Meyer. "Matrix Analisis and Applied Linear Algebra", Ediatorial SIAM.

Grossman, S.I., "Algebra Lineal", Ed. MacGraw-Hill.

Juan de Burgos, "Algebra Lineal", Ed. MacGraw-Hill.