SUBJECT TEACHING GUIDE

G89 - Linear Algebra II

Double Degree in Physics and Mathematics
Degree in Mathematics

Academic year 2026 - 2027

1. IDENTIFYING DATA					
Degree	Double Degree in Physics and Mathematics Degree in Mathematics			Type and Year	Compulsory. Year 2 Compulsory. Year 2
Faculty	Faculty of Sciences				
Discipline	Subject Area: Algebra Module: Compulsory Subjects				
Course unit title and code	G89 - Linear Algebra II				
Number of ECTS credits allocated	6	Term		Semester based (1)	
Knowledge Field	Mathematics and statistics				
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION
Name of lecturer	IRMA PALLARES TORRES
E-mail	irma.pallares@unican.es
Office	
Other lecturers	

4. OBJECTIVES

Knowledge of linear algebra referring to the vector spaces with inner product.
To know and to distinguish the basic techniques of the demonstrations of Linear Algebra.
Study of the vectorial spaces from a point of view of linear algebra (affine spaces) as well as from the geometric point of view (Euclidean spaces).
Recognize affinities, isometries and movements.
Clasify metrics and their associated quadratic forms by rank, index, and signature.

6. SUBJECT PROGRAM

CONTENTS	
1	Euclidean Geometry. Bilinear and multilinear forms. Determinants. Orthogonality. Orthogonal bases and diagonalization. Equivalence and classification of metrics. Spectral theorem. Norm and scalar product. Orthogonal transformations.
2	Affine Geometry. Affine varieties. Euclidean affine space. Angles and distances. Isometries. Classification of isometries. Conics and quadrics
3	Partial Exam
4	Final Exam

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessment	%
Partial Exam	Written exam	No	Yes	40,00
Final Exam	Written exam	Yes	Yes	60,00
TOTAL				100,00

Observations

(A) The final grade for the course, for both the regular and make-up exam sessions, is the higher of:
(1) The weighted average of the knowledge assessment grade and the final exam grade (regular or make-up), in accordance with the specified percentages.
(2) The grade of the final exam, whether regular or make-up, that is, assigning it a weight of 100%.
(B) To pass the course, the final grade obtained using the procedure indicated in section (A) must be at least 5 points, and the grade of the final exam, whether regular or make-up, must be at least 4 points out of 10.
(C) In accordance with current regulations:
- If a student does not obtain the minimum required grade on the Final Exam, the course grade will be the lower of 4.9 and the grade achieved according to section (A).
- If a student has not completed assessment activities that account for more than 50% of the course grade, the student will be recorded as "did not take the exam" on the transcript; if the student has completed exams or assessments that account for 50% or more of the course grade, the corresponding grade will appear on the transcript. The weighting of the various assessment methods is set such that any student who does not take the final exam will receive a grade of "did not take the exam."
- Fraudulent completion of exams or assessment activities will result directly in a failing grade of '0' for the course in the corresponding exam session, thereby invalidating any grades obtained in all assessment activities for the make-up exam session.

(D) To determine the grade for exams and/or written assignments, an oral defense of the same may be requested.

Observations for part-time students

These students can choose between the evaluation system of regular students and one in which they only need to do the final exam and receive its grade as their final grade

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Apuntes de la asignatura.