



Asignatura: Álgebra  
Código: 17814  
Centro: EPS  
Titulación: Grado en Ingeniería Informática  
Nivel: Grado  
Tipo: Formación obligatoria  
Nº de créditos: 6

## INSTRUCTORS

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## SYLLABUS

### PART I. Sets, functions and equivalence relations

1. Sets and functions
2. Equivalence relations

### PART II. The arithmetic of the integers

1. The arithmetic of the integers
2. Congruences

### PART III. Linear Algebra

1. Systems of linear equations, matrices and determinants
2. Vector Spaces
3. Symmetric matrices. Eigenvalues and eigenvectors. Diagonalization.

## REFERENCES

### PART I:

- F. Chamizo. *Álgebra I. Notas de clase con listas de problemas*.  
[www.uam.es/personal\\_pdi/ciencias/fchamizo/libreria/fich/apalgebraiinf96.pdf](http://www.uam.es/personal_pdi/ciencias/fchamizo/libreria/fich/apalgebraiinf96.pdf)
- J. Dorronsoro y E. Hernández. *Números, grupos y anillos*. Addison Wesley Iberoamericana, 1996. Chapter 1.
- J. Gilbert, L. Gilbert, *Elements of Modern Algebra*, 5th edition, Brooks/Cole Thompson Learning, 1999
- A. Papantonopoulou, *Algebra, Pure & Applied*, Prentice Hall, 2002.
- J. Rotman, *A First Course in Abstract Algebra with Applications*, 3<sup>rd</sup> edition, Prentice Hall, 2006.

### PART II:

- L. N. Childs, *A Concrete Introduction to Higher algebra*, 3<sup>rd</sup> edition, Springer, 2009.



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J. Dorronsoro y E. Hernández. *Números, grupos y anillos*. Addison Wesley Iberoamericana, 1996. Chapter 2.

- J. Rotman, *A First Course in Abstract Algebra with Applications*, 3<sup>rd</sup> edition, Prentice Hall, 2006.

PART III:

- E. Hernández Rodríguez, M.J. Vázquez Gallo y M.A. Zurro Moro. *Álgebra lineal y geometría*, Madrid Pearson Educación, 2012.

- D. C. Lay, *Linear Algebra and its applications*, Global Edition, Pearson, 2015.

- S.J. Leon, *Linear Algebra with Applications*, 5<sup>th</sup> edition, Prentice Hall, 1997.

- L. Merino y e. Santos: *Álgebra lineal con métodos elementales*. Thomson-Paraninfo, 2006.

## GRADES

There will be 3 midterms: P1 (October 16th), P2 (November 13th) and P3 (December 20th).

$$P = 0,3 P1 + 0,3 P2 + 0,4 P3,$$

and a final exam **E** in January. Students can choose two different paths to be assessed:

- (1) Continuous assessment.
- (2) Final exam.

### (1) Continuous assessment:

Option A: if the grade in each of the three midterms is at least 4 then:

$$\text{Final grade} = P.$$

Option B:

$$\text{Final grade} = 0,4 P + 0,6 E,$$

or

$$\text{Final grade} = \text{maximum}(0,4 P + 0,6 E, E).$$

### (2) Final exam:

**Final grade = E.**

Students are expected to let their instructor know about their choice. Otherwise, it will be assumed that their choice is **(1)** (continuous assessment).

\*For the students who have to retake the exam in June, **J**, the final grade will be **J**.