



## COURSE DATA

## Data Subject

|               |                      |
|---------------|----------------------|
| Code          | 34168                |
| Name          | Algebraic structures |
| Cycle         | Grade                |
| ECTS Credits  | 6.0                  |
| Academic year | 2021 - 2022          |

## Study (s)

| Degree                       | Center                 | Acad. year | Period     |
|------------------------------|------------------------|------------|------------|
| 1107 - Degree in Mathematics | Faculty of Mathematics | 2          | First term |

## Subject-matter

| Degree                       | Subject-matter            | Character  |
|------------------------------|---------------------------|------------|
| 1107 - Degree in Mathematics | 11 - Algebraic structures | Obligatory |

## Coordination

| Name                       | Department        |
|----------------------------|-------------------|
| ESTEBAN ROMERO, RAMON      | 363 - Mathematics |
| MORETO QUINTANA, ALEXANDER | 363 - Mathematics |

## SUMMARY

English version is not available

El álgebra es la parte de las matemáticas que se centra más específicamente en la estructura de las operaciones que se definen en conjuntos particulares. En el origen de esta disciplina está la resolución de ecuaciones polinómicas por radicales y gran parte de ella se desarrolló con este objetivo.

En este curso nos centraremos en las estructuras básicas que ofrecen un desarrollo más interesante: grupos y anillos. Formalizaremos la noción de anillo de polinomios, preparando el desarrollo de la Teoría de Galois que es el contenido esencial de la materia Ecuaciones Algebraicas del curso siguiente y de la asignatura Algebra Lineal y Geometría II, cuyo objetivo central es la teoría del endomorfismo así como el estudio de estructuras lineales o cuadráticas invariantes por cambio de base.



El álgebra es importante en sí misma y en otras ramas de la matemática: transformaciones geométricas elementales en geometría euclídea; grupos de transformaciones que definen distintas geometrías: lineal, diferencial, algebraica, analítica; grupos que recopilan invariantes topológicos; grupos en codificación, en criptografía, en aritmética.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

Haber cursado la asignatura de Matemática Básica. Además, es conveniente que el estudiante haya cursado también la asignatura de Álgebra Lineal i Geometría I.

## OUTCOMES

### 1107 - Degree in Mathematics

- Capacity for analysis and synthesis.
- Capacity for organization and planning.
- Capacity for criticism.
- Learn autonomously.
- Adapting to new situations.
- Possess and understand the mathematical knowledge.
- Expressing mathematically in a rigorous and clear manner.
- Reason logically and identify errors in the procedures.
- Capacity of abstraction and modeling.
- Knowing the time and the historical context in which occurred the great contributions of women and men in the development of mathematics.

## LEARNING OUTCOMES

**English version is not available**

**WORKLOAD**

| ACTIVITY                                     | Hours         | % To be attended |
|----------------------------------------------|---------------|------------------|
| Theory classes                               | 30,00         | 100              |
| Classroom practices                          | 22,50         | 100              |
| Other activities                             | 7,50          | 100              |
| Study and independent work                   | 7,50          | 0                |
| Preparation of evaluation activities         | 22,50         | 0                |
| Preparing lectures                           | 30,00         | 0                |
| Preparation of practical classes and problem | 22,50         | 0                |
| <b>TOTAL</b>                                 | <b>142,50</b> |                  |

**TEACHING METHODOLOGY****English version is not available****EVALUATION****English version is not available****REFERENCES****Basic**

- Referència b1: Abstract Algebra  
Autor: Dummit-Foote  
Editorial: Wiley 2004
- Referència b2: Algebra  
Autor: T. W. Hungerford  
Editorial: Springer 1974
- Referència b3: Un curso de Álgebra  
Autor: Gabriel Navarro  
Editorial: Universitat de València 2002



- Referència b4: Abstract Algebra with applications, Volumes I i II  
Autor: K. Spindler  
Editorial : Marcel Dekker 1994
- - Referencia b5: Un curso de Estructuras Algebraicas  
Autor: Alexander Moretó  
<https://alexmoqui.wordpress.com/2012/11/29/un-curso-de-estructuras-algebraicas/>

## ADDENDUM COVID-19

**This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council**

In the event of a closure of the facilities due to the health situation, and if this affects all or part of the classes of the subject, these will be replaced by classes where physical attendance will be replaced by online synchronous classes following the established schedules, and with asynchrony work from home.

In the event of a closure of the facilities due to the health situation, and if this affects any of the face-to-face tests of the subject, these will be replaced by tests of a similar nature but in virtual mode through the supported computer tools by the University of Valencia. The evaluation percentages will remain the same as those established in the guide.