# COURSE DATA

## DATA SUBJECT

**Code:** 33681
**Name:** History of ideas and the sciences and mathematics curriculum
**Cycle:** Undergraduate Studies
**ECTS Credits:** 6
**Academic year:** 2026-27

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1305 - Degree in Primary School Education | Facultat de Formació del Professorat | 4 | First quarter |
| 1339 - Grado en Maestro/a Educación Primaria | Facultat de Formació del Professorat | 4 | |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 1305 - Degree in Primary School Education | Specialist in science and mathematics | ELECTIVES |
| 1339 - Grado en Maestro/a Educación Primaria | Specialist in inclusive education | ELECTIVES |

## COORDINATION

SANZ GARCIA MARIA TERESA

SENDRA MOCHOLI CRISTINA

# SUMMARY

History of Ideas and Curriculum in Science and Mathematics is an elective course taught in the fourth year of the Degree in Primary Education, carrying a total of 6 credits. Integrated within the specialization track in Science and Mathematics Education, it combines theoretical and practical components and aims to analyse the historical development of curricula and of the ideas that have underpinned the teaching of science and mathematics, from the establishment of disciplinary codes to the present day.

Through the study of the historical evolution of key concepts and theories in Science and Mathematics, together with a critical analysis of their inclusion in the educational curriculum, the course seeks to provide students with a meaningful approach to the teaching–learning process. Its goal is to enhance the professional competence of future primary school teachers, fostering collective reflection on classroom practice and on the educational purposes that have accompanied science and mathematics from their origins to the present.

# PREVIOUS KNOWLEDGE

## RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

**1305 - Degree in Primary School Education**
Obligation to have previously passed the subject(s)

**1339 - Grado en Maestro/a Educación Primaria**

| | |
|---|---|
| Obligation to take the subject(s) simultaneously | 33674 - Teaching proposals for mathematics<br>33676 - Teaching proposals for sciences<br>33678 - Teaching proposals for sciences and mathematics |

## OTHER REQUIREMENTS

Sufficient oral and written linguistic and communicative competence in the official languages, corresponding to level C1 of the Common European Framework of Reference for Languages (CEFR).

Ability to produce oral and written discourse in a coherent and appropriate manner within the academic context.

# COMPETENCES / LEARNING OUTCOMES

## 1305 - Degree in Primary School Education

Analyse critically the most relevant issues in today's society that affect family and school education: social and educational impact of audiovisual languages and of screens; changes in gender and inter-gender relations; multicultural and intercultural issues; discrimination and social inclusion, and sustainable development; Also, carry out educational actions aimed at preparing active and democratic citizens, committed to equality, especially between men and women.

Assume that teaching must be perfected and adapted to scientific, pedagogical and social changes throughout life.

Design, plan and evaluate teaching and learning classroom activities in multicultural and co-educational contexts.

Develop and evaluate teaching proposals for sciences curriculum contents.

Develop and evaluate teaching proposals mathematics curriculum contents.

Express oneself orally and in writing correctly and appropriately in the official languages of the autonomous region.

Identify and plan the resolution of educational situations that affect students with different abilities and different learning rates, and acquire resources to favour their integration.

Know and apply basic educational research methodologies and techniques and be able to design innovation projects identifying evaluation indicators.

Know how to work as a team with other professionals within and outside the school to attend to each student, to plan the learning sequences and to organise work in the classroom and in the play space.

Know the historical evolution of some mathematical ideas and their reflection in the contents of school mathematics.

Know the historical evolution of some scientific ideas and their reflection in the contents of school sciences.

Know the joint historical evolution of some scientific and mathematical ideas and their reflection in school contents.

Know the processes of interaction and communication in the classroom.

Promote cooperative work and individual work and effort.

Recognise the identity of each educational stage and their cognitive, psychomotor, communicative, social and affective characteristics.

Understand that systematic observation is a basic tool that can be used to reflect on practice and reality, and to contribute to innovation and improvement in education.

Use information and communication technologies as a teaching resource for science and mathematics in the primary school classroom.

Use information and communication technologies effectively as usual working tools.

## DESCRIPTION OF CONTENTS

**1. History of Ideas in Science and Their Presence in School Curricula**
1.1. History of the main scientific ideas and theories
1.2. Role of the history of science in science teaching and learning
1.3. Presence of these ideas in science curricula from the beginnings to the present

**2. History of Ideas in Mathematics and Their Presence in School Curricula**
2.1. History of the main mathematical ideas and theories
2.2. Role of the history of mathematics in mathematics teaching and learning
2.3. Presence of these ideas in mathematics curricula from the beginnings to the present

**3. Relationship Between the History of Concepts in Mathematics and Science and Their Presence in School Curricula**
3.1. Relationship between the history of concepts in mathematics and in science
3.2. Presence of these relationships in science and mathematics curricula from the beginnings to the present

# WORKLOAD

## PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Theoretical and practical classes | 60,00 |
| **Total hours** | **60,00** |

## NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 0,00 |
| Independent study and work | 90,00 |
| Preparation of lessons | 0,00 |
| Preparation for assessment activities | 0,00 |
| Resolution of case studies | 0,00 |
| **Total hours** | **90,00** |

# TEACHING METHODOLOGY

The teaching–learning process will be carried out at different levels:

1. **Theoretical–practical classes** (compulsory attendance), based on the meaningful reception learning model. These sessions will provide the basic information and promote activities aimed at critical reflection and discussion of fundamental ideas.
2. **Seminars** (compulsory attendance), held in small groups, in which various aspects of the course will be addressed.
3. **Individual and/or group tutorials**, where students' questions regarding lectures or seminar preparation will be addressed.
4. **Other predominantly practical sessions** (field trips, workshops, simulations, etc.), designed to carry out activities that complement the work done in lectures and seminars.

# EVALUATION

Student learning will be assessed using different evaluation instruments. Throughout the semester, a formative assessment will be conducted with the aim of monitoring students' learning progress during the entire course. This assessment will consider:

- Active participation in the different sessions (lectures, tutorials, and seminars): **10%**
- Preparation of assignments and education proposals for implementation in a Primary Education classroom: **20–30%**
- Oral presentations of assignments or proposals: **10–20%**

The formative assessment will account for a minimum of **40%** and a maximum of **50%** of the final grade. The activities that make up the formative assessment will be considered non-recoverable in the

first examination session.

In addition, the knowledge acquired in the theoretical–practical classes will be evaluated through a written exam, which will account for a minimum of **50%** and a maximum of **60%** of the final grade. Therefore, the final grade will be calculated as follows:

- **Final grade (first session) = written exam grade (50–60%) + formative assessment grade (40–50%)**

In the second examination session, students may either retain the formative assessment grade or opt to pass the course through a single written exam, which will represent **100%** of the final grade. Thus, the final grade will be calculated as follows:

- **Final grade (second session) = written exam grade (100%)**
  or
- **Final grade (second session) = written exam grade (50–60%) + formative assessment grade (40–50%)**

In all cases, the current *Assessment and Grading Regulations* (2017/108) of the University of Valencia will apply. According to these regulations, a minimum attendance of **80%** of class hours will be required for formative assessment activities carried out in class to be considered in the final grade. Failure to attend up to 20% of class hours may only be justified in cases of force majeure.

Plagiarism or the improper use of artificial intelligence tools may be subject to sanction under Article 15 of the University of Valencia's Assessment and Grading Regulations.

## REFERENCES

### Basic


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- MATTHEWS, M.R. (2017). La enseñanza de la ciencia. Un enfoque desde la historia y la filosofia de la ciencia. México: Fondo de Cultura Económica.
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### Complementary

- BOYER, C.B. (1999). Historia de la matemática. Madrid: Alianza Editorial.
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- MONZÓN, C. y USÓN, A. (1997). Propuestas didácticas innovadoras para la enseñanza de las ciencias físicas, químicas y naturales en el primer tercio del siglo XX en la escuela primaria española. Revista Complutense de Educación, 8(1), 271-289. ttps://revistas.ucm.es/index.php/RCED/article/view/RCED9797120271A
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