# COURSE DATA

## DATA SUBJECT

**Code:** 33619
**Name:** Mathematics for teachers
**Cycle:** Undergraduate Studies
**ECTS Credits:** 9
**Academic year:** 2026-27

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1304 - Degree in Preschool Education | Facultat de Formació del Professorat | 2 | Annual |
| 1305 - Degree in Primary School Education | Facultat de Formació del Professorat | 2 | Annual |
| 1324 - Degree in Preschool Education (Ontinyent) | Facultat de Formació del Professorat | 2 | Annual |
| 1339 - Grado en Maestro/a Educación Primaria | Facultat de Formació del Professorat | 2 | |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 1304 - Degree in Preschool Education | Mathematics for teachers | COMPULSORY |
| 1305 - Degree in Primary School Education | Mathematics for teachers | COMPULSORY |
| 1324 - Degree in Preschool Education (Ontinyent) | MATHEMATICS FOR TEACHERS | COMPULSORY |
| 1339 - Grado en Maestro/a Educación Primaria | Mathematics for teachers | COMPULSORY |

## COORDINATION

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# SUMMARY

The subject Mathematics for Teachers aims, in addition to providing a basic level of mathematical culture, to provide future teachers with skills in mathematics that enable them to analyse, understand and apply the mathematical content taught in schools and allow them to act in a reflective, informed and critical way in the face of the challenge posed by their teaching and learning.

The subject of Mathematics for Teachers forms part, together with the subjects of Didactics of

Mathematics (for infant and primary education) of the training in mathematics required for graduates in both primary and infant education. It is not conceived as a review subject of the contents of school mathematics, which future teachers have already studied in the past, but as a subject that allows them to complete and obtain a vision of this school mathematics from a higher perspective, with the aim of: Knowing the mathematical foundations of the mathematics curriculum of Infant and Primary mathematics (ECI, BOE 312 of 29/12/2007) and being able to pose and solve problems in context, including the mathematical context, and not only in this one. This well-developed ECI competence in the future teacher, Posing and solving mathematical problems linked to everyday life, can provide meaning for a future mathematics teacher at school.

## PREVIOUS KNOWLEDGE

### RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

### OTHER REQUIREMENTS

## COMPETENCES / LEARNING OUTCOMES

### 1305 - Degree in Primary School Education

Acquire basic skills in mathematics: numeracy, calculation, geometry, spatial representation, estimation and measurement, organisation and interpretation of information and probability.

Analyse, reason and communicate mathematical proposals.

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.

Be familiar with ICT as a classroom teaching resource for mathematics and science.

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

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 mathematical principles in the pre-primary and primary education curricula.

Know the processes of interaction and communication in the classroom.

Know the scientific, mathematical and technological principles of the math curriculum in the stage 3-12 years.

Know the scientific methodology and promote scientific thinking and experimentation.

Maintain a critical and independent approach to knowledge, values and public and private social institutions.

Promote cooperative work and individual work and effort.

Raise and solve mathematical problems related to daily life.

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

Reflect on classroom practicals to innovate and improve teaching. Acquire habits and skills for independent and cooperative learning and promote it in students.

Understand mathematics as socio-cultural knowledge.

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 effectively as usual working tools.

Use information and communication technologies effectively as usual working tools in mathematics.

Value the relationship between mathematics and science as one of the pillars of scientific thinking and knowledge.

## 1324 - Degree in Preschool Education (Ontinyent)

Acquire basic skills in mathematics: numeracy, calculation, geometry, spatial representation, estimation and measurement, organisation and interpretation of information and probability.

Analyse, reason and communicate mathematical proposals.

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; multiculturalism and interculturalism; 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.

Be familiar with ICT as a classroom teaching resource for mathematics and science.

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

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 mathematical principles in the pre-primary and primary education curricula.

Know the processes of interaction and communication in the classroom.

Know the scientific, mathematical and technological principles of the math curriculum in the stage 3-12 years.

Maintain a critical and independent approach to knowledge, values and public and private social institutions.

Promote cooperative work and individual work and effort.

Raise and solve mathematical problems related to daily life.

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

Reflect on classroom practicals to innovate and improve teaching. Acquire habits and skills for independent and cooperative learning and promote it in students.

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## DESCRIPTION OF CONTENTS

**1. Arithmetic and introduction to algebra**

1.1 Arithmetic

1.1.1 Natural numbers, integers and rational numbers

1.1.2 Elementary operations and algorithmic calculus

1.1.3 Divisibility

1.1.4 Ratio and Proportion

1.1.5 Solving Arithmetic Problems

1.2 Introduction to algebra.

1.2.1 New signs for the representation of numbers and quantities.

1.2.2 Properties, relations and regularities in numerical sequences

1.2.3 Properties, relations and regularities in number sequences

**2. Geometry of space and plane**

2.1 From real-world objects to geometrical objects

2.2 The study of geometric objects in space and in the plane: description, properties and relationships.

2.3 The processes of classifying, defining and proving in geometry.

2.4 Geometric motions and transformations.

**3. Estimation and measurement of quantities**

3.1 The concept of measurement. Mathematical properties of measurement of quantities.

3.2 The unit of measurement. Type of measurement: exact and approximate, direct and indirect. Formulas.

3.3 The Decimal Metric System.

**4. Statistics and probability (treatment of information subject to uncertainty).**

4.1 The statistical process

4.2 Organisation of statistical information. Tables and graphs.

4.3 Data processing. Measures of centralisation and dispersion.

4.4 The concept of probability. Measurement of probabilities.

4.5 Dependence and independence of events. Conditional probability.

4.6 Solving Probability Problems.

# WORKLOAD

## PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Theoretical and practical classes | 90,00 |
| **Total hours** | **90,00** |

## NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 0,00 |
| Independent study and work | 135,00 |
| Preparation of lessons | 0,00 |
| Preparation for assessment activities | 0,00 |
| Resolution of case studies | 0,00 |
| **Total hours** | **135,00** |

## TEACHING METHODOLOGY

In order to achieve the objectives of this subject, an active methodology will be used, which makes student involvement essential. A critical approach to the various theoretical contents that will be provided will be encouraged without excluding the lecture sequences that the subject may require.
Thus, the academic practice in this subject is structured on several levels:
**1. Classroom sessions**

1.2 Classroom: With the whole group
Theoretical-practical face-to-face classes.
1.3. Individual tutorials
Personalised tutorials for guidance and monitoring of course work and supervision of training activities. Teachers will be able to use face-to-face and/or virtual tutorials.
1.4. Group work
Group work to motivate students in the activity of research, analysis and synthesis of information, to encourage personal relationships and share situations to approach the contents of
and mathematical debate. The defence of this work may take place either in tutorials or seminars, in the form of an interview or oral report, or in oral presentations to the rest of the class group.

**2. Non-face-to-face activities: personal study and readings**
Preparation of the assignments and completion of the specific guided work. The aim is to guide the student in learning-oriented activities.

**3. Materials**
The guidance and materials necessary for the development of these activities will be provided to the student either in the classroom sessions, or through the reprographics service or from the virtual classroom

## EVALUATION

Assessment of student learning will be carried out using different assessment instruments.
Throughout the two four-month periods, a formative assessment will be carried out with the aim of favouring the acquisition of specific knowledge of the subject, the attitude towards the subject and respect for classmates, attendance and participation in class, interest and perseverance to achieve positive progress and the ability to work in a group. The weight of the formative assessment will have a K value
with K between 0.3 and 0.4.

Throughout the course there will be two exams (and a third one in the second call), the aim of these exams will be to evaluate the following aspects:

- The acquisition of knowledge and skills specific to the subject.

- The student's linguistic and communicative competence, both oral and written, in mathematics.
- The student's mastery of methods, techniques and other abilities and skills specific to mathematics for a student teacher.

Below, each of the assessment items is detailed and it is explained how to obtain the grade in each of the two official examinations:
- EF1 and EF2: these two grades correspond to the formative assessment carried out in the first and second term. Each of these two grades will be the result of the periodic performance of evaluable activities and the individual work of each student, these grades are not recoverable.
- EP1: at the end of the first term, an exam will be held on the date established by the official calendar. This exam will include the contents worked on during the first term.
- If the mark EP1 is 5 or more, it is understood that the student has passed the contents taught in the first term and the mark for the first term will be the maximum between the weighted average (K*EF1+(1-K)*EP1) and the mark of the exam (EP1). Students who are in this situation may choose, in the first sitting, to take the exam only for the contents of the second term or for the contents of the whole course. The second option implies waiving the EP1 mark.
- E1: corresponds to the exam to be taken at the first sitting. In order to cater for the two possible cases, two examination models will be proposed:

- E1A: for those students who have passed the contents taught in the first term. This test will only include content from the second term. If the mark for E1A is higher than or equal to 5, it is understood that the student has passed the contents taught in the second term and the mark for the second term will be the maximum between the weighted average (K*EF2+(1-K) *E1A) and the mark for the exam (E1A). The final mark in the first call will be the arithmetic mean of the final marks of the two four-month periods. If the grade E1A is lower than 5, the student will have to sit the second sitting. For those students who, having passed EP1, fail E1A, the grade that will appear in the grade report will be the minimum between 4 and the arithmetic mean of EP1 and E1A.
- E1B: for those students who have not passed the contents taught in the first term. In this test, the contents taught throughout the course will be assessed. If the mark of E1B is higher than 5, the final mark will be the maximum between the weighted average (K*(0,5*EF1+0, 5*EF2)+(1-K)*E1B) and the mark of the exam (E1B). If the mark for E1B is lower than 5, this will be the mark that will appear in the corresponding report and the student will have to sit the second sitting.

- E2: Students who sit the exam in the second sitting must pass an exam that evaluates the whole course. If they pass the exam, the final mark will be the maximum between the weighted average (K*(0.5*EF1+0. 5*EF2)+(1-K)*E2) and the exam mark (E2). In case of failure, the mark published in the minutes will be the mark obtained in the exam at the second sitting.

The teaching staff may decide, based on didactic criteria, not to allow the use of the calculator in the assessment tests.

Teachers may penalise spelling and/or grammatical errors in the assessment tests, indicating the maximum penalty in the test instructions.

In those groups in which teaching is given in Valencian, it is compulsory for students to take the tests in Valencian (in accordance with the regulations established in the University of Valencia's Regulations on Linguistic Uses).

In any case, the current assessment and grading regulations of the University of Valencia (2017/108) will be applied, plagiarism or the improper use of artificial intelligence tools may be sanctioned in accordance with article 15 of the assessment and grading regulations of the University of Valencia.

## REFERENCES


- Otros libros de la colección Síntesis. Matemáticas cultura y aprendizaje.
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