

**COURSE DATA****DATA SUBJECT****Code:** 33627**Name:** Teaching mathematics at nursery school**Cycle:** Undergraduate Studies**ECTS Credits:** 6**Academic year:** 2026-27**STUDY (S)**

Degree	Center	Acad. year	Period
1304 - Degree in Preschool Education	Facultat de Formació del Professorat	4	First quarter
1324 - Degree in Preschool Education (Ontinyent)	Facultat de Formació del Professorat	4	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1304 - Degree in Preschool Education	Teaching maths in preschool education	COMPULSORY
1324 - Degree in Preschool Education (Ontinyent)	TEACHING MATHS IN PRESCHOOL EDUCATION	COMPULSORY

COORDINATION

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SUMMARY

The course Mathematics Education for Early Childhood Education is a semester-long, 6 ECTS credit subject taught in the fourth year of the Degree in Preschool Education.

The main aim of the course is to promote the acquisition of the specific competencies outlined in the Degree programme, particularly those related to the content and pedagogical principles of mathematics education. These competencies are intended to prepare future teachers to effectively design and implement mathematics teaching and learning situations in early childhood education.

Furthermore, the course seeks to equip future early childhood educators to respond to the needs of a society that increasingly demands a stronger mathematical foundation among its citizens - one that fosters



mathematical literacy, cultural awareness, autonomy, and critical thinking skills.

The course is structured around the key content areas commonly found in early childhood mathematics curricula: logical thinking, number and arithmetic, geometry, measurement, and problem solving.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

To successfully complete the course, it is advisable for students to have prior knowledge of mathematical content covered in the course Mathematics for Teachers.

COMPETENCES / LEARNING OUTCOMES

1304 - Degree in Preschool 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; 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.

Analyse ICT as a teaching resource for mathematics in pre-primary education.

Analyse mathematics didactically in the pre-primary mathematics curriculum.

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

Be familiar with theories on the acquisition and development of mathematical learnings in pre-primary education.

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

Develop and evaluate mathematical contents in the pre-primary education curriculum by using appropriate teaching resources and promote the corresponding competences in students.

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

Know and implement innovative experiences for teaching mathematics in pre-primary education.

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 teaching interventions that take into account the difficulties and errors in learning mathematics in pre-primary education.

Know teaching strategies to develop competences in numerical representations and in spatial and geometric notions.

Know teaching strategies to favour logical thinking in students in pre-primary education.

Know the difficulties and errors in the process of teaching and learning mathematics in pre-primary education and the cognitive processes involved.

Know the mathematics curriculum in pre-primary education.

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 effectively as usual working tools.

1324 - Degree in Preschool Education (Ontinyent)

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.

Analyse ICT as a teaching resource for mathematics in pre-primary education.

Analyse mathematics didactically in the pre-primary mathematics curriculum.

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



Be familiar with theories on the acquisition and development of mathematical learnings in pre-primary education.

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

Develop and evaluate mathematical contents in the pre-primary education curriculum by using appropriate teaching resources and promote the corresponding competences in students.

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.

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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 effectively as usual working tools.



DESCRIPTION OF CONTENTS

1. Development of basic numerical concepts
 - Numerical uses and contexts
 - Acquisition and elaboration of the numerical sequence
 - Counting Principles
 - Counting errors
2. Teaching and learning of the decimal number system
 - Fundamental concepts
 - Models for teaching the decimal number system
 - Errors and obstacles in learning the decimal number system
3. Elementary arithmetic operations with natural numbers
 - Count-based strategies prior to algorithms
 - The role of models in the transition to algorithms
 - Teaching and learning of standard algorithms
 - Modeling of algorithms with manipulative materials
4. Introduction to problem-solving
 - Semantic categorization of word problems of one stage
 - Computational thinking
 - Modelling in the infant classroom
5. Algebraic sense
 - Development of logical concepts and skills: discrimination, classification, ordering, relation, etc.
 - Patterns and series
6. Geometric and spatial thinking
 - Spatial and perceptual skills
 - Errors in tasks involving spatial skills
 - Plane figures and three-dimensional geometric bodies
 - Difficulties in learning geometry in the infant classroom
7. Approach to measurement
 - The activity of measuring. Perception of magnitudes through comparison
 - Basic magnitudes: length, capacity, weight and time
 - Difficulties associated with the measure
8. Approach to data analysis and probability
 - The production of statistical sense from the context
 - Collection and representation of data
 - Starting data interpretation
 - Basic notions of probability

Transversal contents. In a transversal manner, all these topics will analyze innovations and scientific research in the area, the use of manipulative and technological tools, as well as the programming, design, development, and sequencing of activities that enable the curriculum to be adapted to the sociocultural and classroom context, taking into account its diversity

**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 development of the course may be structured at different levels:

- Students will receive instruction on key concepts in mathematics education. A variety of teaching methods will be used, including lectures, practical sessions, and discussion of texts selected by the teaching staff.
- Students may also be asked to design and analyse teaching sequences, identify and solve problem situations, and interpret the curriculum.
- Work may be carried out individually or in groups. In all cases, students are expected to participate actively as problem-solvers and creators.

EVALUATION

Student assessment will be carried out in two distinct components:

1. Continuous assessment, which involves ongoing evaluation of students' progress and the work they complete throughout the course. This component will account for between 40% and 60% of the final grade and may include the following elements:
 - Class attendance and active participation.
 - Completion and quality of assigned tasks and projects.
 - Written tests administered during the course, independent of the officially scheduled final exam.
2. Final exam, which will account for between 60% and 40% of the final grade. This assessment may take into account, in general terms:
 - The student's linguistic and communicative competence, both oral and written, in the



context of mathematics.

- The acquisition of specific knowledge and skills related to the teaching of mathematics in early childhood education.
- Proficiency in methods, techniques, and other relevant abilities specific to mathematics and mathematics education.

To pass the course, students may be required to achieve a minimum score of 5 out of 10 in the continuous assessment and/or the final exam, as well as demonstrate the level of linguistic accuracy and appropriateness expected of future educators.

In all cases, the current Assessment and Grading Regulations of the University of Valencia (2017/108) will be applied.

Instructors may deduct marks for spelling and/or grammatical errors in assessment tasks. In groups where instruction is delivered in Valencian, students are required to complete assessment tasks in Valencian.

Plagiarism or the improper use of artificial intelligence tools may be penalised in accordance with Article 15 of the Assessment and Grading Regulations of the University of Valencia.

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