Information about the subject

Degree: Bachelor of Arts Degree in Early Childhood Education

Faculty: Faculty of Teacher Training and Education Sciences

Code: 1410304 **Name:** Mathematics and its Teaching

Credits: 6,00 **ECTS Year:** 3 **Semester:** 1

Module: Learning the natural sciences, social sciences and mathematics

Subject Matter: Learning mathematics **Type:** Compulsory

Department: Mathematics, Natural Sciences, and Social Sciences applied to Education

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:

143A	Aida Garcia Sanz **(Responsible Lecturer)**	aida.garcia@ucv.es
143ALA	Ana Isabel Carceles Medina **(Responsible Lecturer)**	anaisabel.carceles@ucv.es

Module organization

Learning the natural sciences, social sciences and mathematics

Subject Matter	ECTS	Subject	ECTS	Year/semester
Learning mathematics	6,00	Mathematics and its Teaching	6,00	3/1
Learning of natural sciences	4,50	Natural Sciences and their Teaching	4,50	4/1
Learning of social sciences	4,50	Social Sciences and their Teaching	4,50	4/1

Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

R1	The student makes clear and detailed oral and written descriptions and presentations, developing concrete ideas and ending with appropriate conclusions while maintaining a high degree of grammatical, syntactic and orthographic correctness.
R2	The student integrates and develops logical-mathematical notions in any of the areas of the Early Childhood Education stage.
R3	The student uses appropriate information from different sources to carry out his/her tasks and cites bibliographic references in accordance with APA standards.
R4	The student values mathematics as a cultural fact.
R5	The student participates actively in the tasks proposed in class.
R6	The student knows and is able to give examples and counterexamples of basic mathematical concepts in the areas of geometry, sets, arithmetic and measurement.
R7	The student designs and proposes activities and resources to work the different mathematical contents of the Early Childhood Education curriculum appropriate to the different levels, taking into account their own characteristics as well as the difficulties and mistakes that children can make.
R8	The student justifies the suitability of their proposed activities taking into account the characteristics of children's thinking and the different theories of teaching and learning mathematics.

Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

GENERAL		Weighting			
		1	2	3	4
G1	To know the objectives, curricular contents and evaluation criteria of Early Childhood Education.			x	
G2	To promote and facilitate learning in early childhood, from a globalizing and integrating perspective of the different cognitive, emotional, psychomotor and volitional dimensions.			x	
G3	To design and regulate learning spaces in contexts of diversity that address the unique educational needs of students, gender equality, equity and respect for human rights.		x		
G6	To know the evolution of language in early childhood, know how to identify possible dysfunctions and ensure their correct evolution. To deal effectively with language learning situations in multicultural and multilingual contexts. Express themselves orally and in writing and master the use of different techniques of expression.			x	
G11	To reflect on classroom practices to innovate and improve teaching. To acquire habits and skills for autonomous and cooperative learning and promote it in students.		x		

SPECIFIC		Weighting			
		1	2	3	4
E35	To know the scientific, mathematical and technological foundations of the curriculum of this stage as well as the theories on the acquisition and development of the corresponding learning.				x
E36	To know didactic strategies to develop numerical representations and spatial, geometric and logical development notions.				x
E37	To understand mathematics as sociocultural knowledge.			x	
E40	To know the most outstanding moments in the history of science and technology and their transcendence.			x	

| E41 | To elaborate didactic proposals in relation to the interaction between science, technology, society and sustainable development. | | x | |
| E42 | To promote interest and respect for the natural, social and cultural environment through appropriate educational projects. Encourage experiences of initiation to information and communication technologies. | x | | |

Course guide

Year 2025/2026
1410304 - Mathematics and its Teaching

Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4, R5, R6, R7, R8	80,00%	Written test: Final summative or continuous theoretical and practical test (open questions, objective test questions, truncated exam, etc.). Preparation of fieldwork memorandums. Solution of case studies, single case, etc.
R1, R2, R3, R4, R5, R6, R7, R8	15,00%	Oral presentation of group and individual work.
	5,00%	Individual monitoring of attendance at face-to-face sessions and active participation in theoretical and practical classes, seminars and tutorials.

Observations

Passing the exam is an essential, but not sufficient, requirement to pass the subject.

The written test will consist of an exam worth 50% and the completion of one or two assignments worth 15%, each applying the knowledge acquired in the different sections of the subject. In addition, several classroom exercises worth 15% will be completed.

The exam will consist of:
 ·A section of between 20 and 40 closed-answer questions (true or false, multiple choice, fill in the blanks, sort) that will count for 50% of the exam grade. One correct answer will be deducted for every three incorrect answers.
 ·A section of between 2 and 4 theoretical and practical development questions that will count for 50% of the exam grade.

It is an essential requirement to pass the subject that the student does not make more than 3 serious spelling mistakes in each written test (both assignments, classroom exercises and theoretical-practical exam).

Grades for passed sections of a course are not carried over to the next.

Assignments or exercises that are not submitted on time and in the correct format to the Platform will not be accepted. Alternative assignments will not be offered for occasional absences.

Single assessment:

Exceptionally, students who cannot submit to the continuous assessment system or do not attend at least 60% of the sessions may opt for this assessment system. In this case, the assessment will be carried out as follows:

·Exam: Using the same format described above, it will account for 55% of the course grade. Assessed Learning Outcomes: R1-R4, R6-R8

·Class exercises: These will be evaluated by an exam which will account for 15% of the course grade. Assessed Learning Outcomes: R1-R4, R6-R8

·Activity and materials design work: This will account for 15% of the grade. Assessed Learning Outcomes: R1-R8

·Oral presentation of individual or group work: This will account for 15% of the grade. Assessed Learning Outcomes: R1-R8

Artificial Intelligence:

·• Students will be able to use AI for personal study of the subject.

·• Students may not use AI for assessable assignments, unless required in a specific activity and instructed by the instructor.

If AI is used in any of the activities, the specific parto f the activity where it was used, which AI tool was used, and for what purpose must be stated.

CRITERIA FOR THE AWARDING OF HONOURS:

In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with 9 Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

M1   PARTICIPATIVE MASTERCLASS

M2   CLASSROOM PRACTICES

M6   PROBLEM-BASED LEARNING

M7   GROUP TUTORING

M8   INDIVIDUAL TUTORING

IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Presentation of content by the teacher, analysis of competences, explanation and demonstration of skills, abilities and knowledge in the classroom. M1	R1, R2, R4, R5, R6	27,00	1,08
Group work sessions supervised by the teacher, case studies, diagnostic analyses, problems, field studies, computer classroom, visits, data searches, libraries, network, Internet, etc. Meaningful construction of knowledge through student interaction and activity. M2	R1, R2, R3, R4, R5, R6, R7, R8	13,50	0,54
Presentation in plenary. Application of interdisciplinary knowledge M2, M7, M8	R1, R2, R3, R4, R5, R6, R7, R8	8,00	0,32
Personalised attention in small groups. Period of instruction and/or guidance by a tutor with the aim of reviewing and discussing the materials and topics presented in classes, seminars, readings, assignments, etc. M7, M8	R1, R2, R4, R5, R6, R7, R8	7,00	0,28
Set of oral and/or written tests used in the initial, formative or summative assessment of the student. M2	R1, R2, R3, R4, R5, R6, R7, R8	4,50	0,18
TOTAL		**60,00**	**2,40**

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Group preparation of readings, essays, problem solving, seminars, papers, reports, etc. to present or deliver in theory classes, practical classes and/or small group tutorials. Work done on the platform or other virtual spaces. M2, M7	R1, R2, R3, R4, R5, R6, R7, R8	36,00	1,44
Student study: Individual preparation of readings, essays, problem solving, seminars, papers, reports, etc. to present or deliver in theory classes, practical classes and/or small group tutorials. Work done on the platform or other virtual spaces. M2, M8	R1, R2, R3, R4, R5, R6, R7, R8	54,00	2,16
TOTAL		**90,00**	**3,60**

Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
INTRODUCTION	We will study the importance of logical-mathematical on cognitive development and the main features of logical-mathematical. Analysis of the mathematics content of the curriculum of the Child Education. We will see the objectives and content established in the curriculum of Child Education.
GEOMETRY	Includes the main geometric concepts that appear in early childhood education as well as teaching materials and resources for teaching geometry. Enforcement activities will be conducted.
SETS	We will see the main concepts of sets that appear in early childhood education as well as teaching materials and resources for teaching. Enforcement activities will be conducted.
NUMBERS	We will study the main concepts of creation of the concept of numbers that appear in early childhood education as well as teaching materials and resources for teaching. Enforcement activities will be conducted.
MEASURE	We will introduce the main concepts of measure as they appear in early childhood education as well as teaching materials and resources for teaching. Enforcement activities will be conducted

Course guide

Temporary organization of learning:

Block of content	Number of sessions	Hours
INTRODUCTION	5,00	10,00
GEOMETRY	6,00	12,00
SETS	6,00	12,00
NUMBERS	7,00	14,00
MEASURE	6,00	12,00

References

·Alcalá, M., (2002). La construcción del lenguaje matemático. Barcelona: Grao.

·Alsina, C., Burgués, C., Fortuny, J. M., Jiménez, J. y Torra, M., (1998). Enseñar Matemáticas. Barcelona: Grao.

·Alsina, A., Cap i Cua, Barcelona: Ed. Casals.

·Alsina i Pastells, A. (2006): Cómo desarrollar el pensamiento matemático de 0 a 6 años.

·Barcelona: Octaedro

·Baroody, A. J., (1988). El pensamiento matemático de los niños. Madrid: Visor.

·Carvajal, A., Rabanal, L., (1987). Desarrollo lógico-matemático Enciclopedia de la Educación Preescolar. Madrid: Diagonal/Santillana.

·Canals, M. A., (1979). Didàctica de la matemàtica al parvulari. Barcelona: Rosa Sensat.

·Carbó, L., Gràcia, V., (2004). El mundo a través de los números. Lleida: Milenio.

·Cascallana, M. T., (1988). Iniciación a la matemática. Materiales y recursos didácticos. Madrid: Santillana.

·Chamorro, Mª del C., (2003). Didáctica de las Matemáticas. Editorial Pearson Prentice Hall

·Chamorro, Mª del C., (2014). Didáctica de las matemáticas para educación infantil. Pearson Educación.

·D.O.G.V. (2022). DECRETO 100/2022, de 29 de julio, del Consell, por el cual se establece la ordenación y el currículo de Educación Infantil.

·Gateño, C., (1966). Aritmética con números de color. Madrid: Cuisenaire de España.

·Gómez, B., (1988). Operaciones con números naturales. Madrid: Síntesis.

·Kamii, C. K., (1983). El número en la educación preescolar. Madrid: Visor

·Kamii, C. K., (2003 6ª edición / 1985). El niño reinventa la aritmética. Madrid: Machado Libros.

·Lahora, M. C., (1992). Actividades matemáticas con niños de 0 a 6 años. Madrid: Narcea.

·Miranda, A., Fortes, C., Gil, M. D. (1999) Dificultades del aprendizaje de las matemáticas. Un enfoque evolutivo. Ediciones Aljibe

·Muñoz-Catalán, M.C. y Carrillo Yañez, J.C. (2018) Didáctica de las matemáticas para maestros de Educación Infantil. Editorial Paraninfo.

·Santos, C., (1992). Los bloques lógicos de Dienes en Educación Infantil y Primaria. Salamanca: Amarú.

·Schiller, P., Rossano, J., (1993). 500 actividades para el currículo de educación infantil .Madrid: Narcea.

·Serrano, J.M., González-Herrero, E. y Pons, R.M. (2008) Aprendizaje cooperativo en matemáticas: diseño de actividades en Educación Infantil, Primaria y Secundaria. Editorial Editum.