Mathematical Practice in the early Childhood education classrooms

Code: 101987
ECTS Credits: 4

2025/2026

Degree	Type	Year
Early Childhood Education	OB	4

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

It is recommended that students have completed the compulsory third-year course:

- Mathematics in the Early Childhood Education Curriculum.

Objectives and Contextualisation

The course 'Mathematical Practice in the Early Childhood Education Classroom' is the natural continuation of the course 'Mathematics in the Early Childhood Education Curriculum' taken in the third year of the Early Childhood Education Degree. This course develops theoretical and practical knowledge and the application of the Early Childhood Education mathematics curriculum, focusing on the mathematical content blocks of space and shape, measurement, and data analysis (statistics and probability). This subject emphasises the knowledge, analysis and design of educational situations for teaching and learning mathematics in early childhood education, specifically for children aged 3 to 6, revisiting what was learned in the previous year in terms of logic and numbers for children aged 0 to 6.

This subject aims to emphasise the ability to connect and integrate the knowledge that students are acquiring in different subjects, introducing them to mathematical learning from a global and interdisciplinary perspective at an early age.

Learning objectives:

- To understand the mathematical content of the curriculum for 0-6 year olds in relation to space and shape, measurement and data analysis (statistics and probability).

- To understand and analyse interdisciplinary teaching situations, identifying mathematical content and processes.
- To design teaching and learning situations for mathematics for children aged 3 to 6.

Competences

- Consider classroom practical work to innovate and improve teaching.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Promote and facilitate early infant learning, from a global and integrative perspective of different cognitive, emotional, psychomotor and developmental dimensions.
- Understand mathematics as sociocultural knowledge.
- Understand teaching strategies to develop numerical representations and spatial geometric and logical development notions,.
- Understand the scientific, mathematical and technological bases of the curriculum at this stage as well as theories on the acquisition and development of the corresponding learning.
- Work in teams and with teams (in the same field or interdisciplinary).

Learning Outcomes

1. Analyse a situation and identify its points for improvement.
2. Be able to analyse a learning situation, assess its relevance and make innovative alternative proposals.
3. Be able to design personal teaching situations based on the curriculum and theoretical guidelines and examples shown in the subject for the teaching and learning of mathematics in infant education.
4. Be able to draw on best mathematical practices to create new and personal ones.
5. Be able to identify mathematical aspects in everyday life and be able to potentiate them and share them with children to facilitate their learning.
6. Be able to organize both personal and group work to design and implement a joint project.
7. Know about didactic situations and experiences that are created with a global and inclusive perspective of different cognitive, emotional, psychomotor and volitional dimensions.
8. Propose new methods or well-founded alternative solutions.
9. Understand learning and teaching theory as governed by the mathematics curriculum.
10. Understand the diversity of educational situations designed around the mathematics curriculum.
11. Understand the diversity of interdisciplinary teaching situations for teaching and learning of mathematics in kindergarten.

Content

This subject consists of four teaching units. The first unit is cross-curricular and connects with the mathematical content of units 2, 3 and 4.

1.- Mathematics in interdisciplinary and globalising situations:

1.1. Official regulations (Royal Decree 95/2022, of 1 February, establishing the organisation and minimum teaching requirements for Early Childhood Education, and DECREE 21/2023, of 7 February, on the organisation of teaching in early childhood education).

1.2. Elements of the curriculum and location of mathematics (space and shape, measurement, data analysis).

1.3. Psychological theoretical framework for teaching and learning mathematics. Constructivist conception.

1.4. Development of mathematical thinking in the 3-6 stage.

1.5. Organisation of mathematical content into five fundamental content blocks.

2.- Space and shape:

2.1. Learning trajectory of space and shape in the 3-6 stage.

2.2. Recognition and work with 0D, 1D, 2D and 3D.

2.2. Situation and orientation in space: Location and relative positions.

3.- Measurement:

3.1. Learning trajectory for measurement in the 3-6 stage.

3.2. Magnitudes and measurement: Identifying magnitudes, comparing and ordering elements, using conventional and non-conventional units of measurement.

3.3. Working with magnitudes of length, capacity, mass, area and time.

4.- Data analysis (statistics and probability):

4.1. Statistical studies: Data collection, representation of information, creation of simple graphs, analysis and interpretation of data and graphs.

4.2. Introduction toprobability literacy: Random experiments, certain, possible and impossible events, and understanding and use of Laplace's rule.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Presencial seminars	20	0.8	
Type: Supervised			
Supervised	30	1.2	
Type: Autonomous			
Autonomous student work	50	2	

Activity	Hours	Methodology
In person In a large group	10 h	Presentations on basic topics from the programme. These are carried out with the entire class through open and active participation by the students. Each session will end with the presentation of the tasks to be carried out in the seminar.
Seminars	20 h	

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In small groups		Small group workspaces (50% of the large group) supervised by teachers where, through document analysis or research activities, the content and topics covered are explored in greater depth.
Follow-up seminars In small groups	20 h	Small group workspaces supervised by teachers where students show the results of their group work.
Independent work Individually	50 h	Students must conduct their own research, with guidance from teaching professionals, to gain a deeper understanding of the course content. They must also complete the tasks begun in the seminars and dedicate the necessary time to studying in order to consolidate their learning.

program 15 minutes of one class will be reserve for student to evaluat their lecturer and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Group activities	10%	0	0	1, 2, 3, 5, 4, 6, 9, 7, 8
Group work	30%	0	0	1, 3, 4, 6, 10, 9, 7, 8
Individual final written exam	45%	0	0	1, 2, 5, 10, 11, 9, 7, 8
Individual space and shape questionnaire	15%	0	0	1, 2, 3, 5, 10, 11, 7

CONTINUOUS assessment will be carried out throughout the course using the activities listed below. As can be seen, the course assessment consists of 60% individual assessment tasks and 40% group assessment tasks.

Assessment activities	Percentage of final mark	Hours of dedication	Description
Individual final written exam	45%	2.5 hours in class + Independent work	Written exam with questions related to the achievement of the course objectives (45% of the final mark). This individual written exam includes: content taught in the master classes, activities carried out in the seminars, questions related to required readings, and content developed in group work.

			The final individual written test will be held at the end of all teaching units of the course: 09-12-2025 (group 61) and 10-12-2025 (group 62). This activity can be retaken. The retake date for the individual written test will be: 27/01/2026 (group 61) and 28/01/2026 (group 62).
Individual space and shape questionnaire	15%	1 hour in class + Independent work	Students will complete a theoretical questionnaire about the space and shape unit. This questionnaire willconsist of several multiple-choice and open-ended questions in which students must demonstrate a basic understanding of the space and shape content specific to early childhood and primary education. To pass this questionnaire, students must answer 10 of the 15 questions correctly. The individual space and shape questionnaire will be taken at the end of unit 2: 14-10-2025 (group 61) and 22-10-2025 (group 62). This activity can be retaken. The retake date for the space and shape questionnaire will be the same as the individual final written exam: 09-12-2025 (group 61) and 10-12-2025 (group 62).
Group work	30%	4 hours of classroom time + Independent work	In groups, students must design a mathematical proposal lasting 2 to 4 sessions and implement it in a classroom of 3 to 6-year-olds, analysing the mathematical content and processes developed by the pupils. Each group will submit a single written assignment (20%) and make an oral presentation at the follow-up seminar (10%). The assessment of the oral presentation will be based on a 360-degree evaluation (self-evaluation, peer evaluation, and evaluation by the teacher). The oral presentation of the group project and the submission of the written assignment will take place on 25/11/2025 (group 61) and 26/11/2025 (group 62). This activity cannot be retaken.
Group activities	10%	4.5 hours of classroom time + Independent work	As a group, students will haveto submit a total of three assignments corresponding to each of the teaching units dedicated to space and shape, measurement, and data analysis (Units 2, 3, and 4). Half of the mark for each assignment will be awarded by the teacher in charge of the class group, while the other half will be awarded by the students themselves (peer assessment). Teachers will publish the dates for the submission of group assignments when they publish the programme, as the dates depend on the timing of the teaching units (10%).

This activity cannot be retaken.

RESIT EXAM:

Students who do not obtain a grade of 5 or higher in the individual final written exam may take a resit exam, which will account for 45% of the course grade, replacing the final exam grade. The maximum grade for the resit exam will always be a 5. This resit exam will be held on 27/01/2026 (group 61) and 28/01/2026 (group 62).

Likewise, students who do not obtain a grade of 5 or higher on the space and form questionnaire may take a make-up test that will account for 15% of the course grade, replacing the questionnaire grade. The maximum grade for this retake exam will always be a 5. This retake exam will be held on 9/12/2025 (group 61) and 10/12/2025 (group 62).

CALCULATION OF THE SUBJECT MARK:

The final mark for the course is the weighted average of the assessment activities highlighted above, with the following conditions:

- In order to be eligible for the weighted average with the rest of the course grades, the student must have obtained a minimum of 5 in the final exam or the resit exam. If the student does not obtain a minimum of 5 in the final exam or the resit exam, they will not pass the course and the final grade for the subject will be 3.
- Late submission of assessment activities will result in a 0 in the assessment of those activities.
- Failure to attend the individual space and form questionnaire will result in a 0 in the assessment of that activity.
- In order for students to be assessed, they must submit at least 75% of the assessable assignments (in addition to taking and passing the final exam or resit exam with a grade of 5). If students do not submit at least 75% of the assessable assignments, they will be considered "unassessed".
- Assessment activities cannot be retaken under any circumstances, except for the individual final written test and the individual space and form questionnaire.
- Even if the student passes the final test or, where applicable, the resit, if the weighted average of the marks does not reach 5, the student will fail the subject and the final mark on their record will be a 3.
- Class attendance is compulsory: students must attend all classes in order to be assessed (a maximum of 20% of absences is allowed, both in large group classes and in seminars).

At the same time, students must take into account the following regulatory considerations regarding assessment:

- Calculators are not permitted in individual written tests, unless indicated by the teacher.
- With regard to the use of Artificial Intelligence, Model 2 - Restricted Use will be followed in this course: For this course, the use of Artificial Intelligence (AI) technologies is permitted exclusively in support tasks such as bibliographic or information searches and the correction of texts or translations. Students must clearly identify which parts have been generated using this technology, specify the tools used and include a critical reflection on how these have influenced the process and the final result of the activity. Failure to be transparent about the use of AI in this assessable activity will be considered academic dishonesty and may result in a partial or total penaltyon the activity mark, or more severe penalties in serious cases.
- All assessment activities are compulsory for all students.

- The mark fora group assignment is not necessarily the individual mark for each of the students in that group.
- Students who are not physically present at the seminar sessions during the development of the deliverables for each of the three blocks will receive a maximum mark of 5 for those activities.

In order to pass this course, students must demonstrate good general oral and written communication skills and a good command of the language of instruction specified in the course guide. All activities (individual and group) will therefore be assessed on linguistic accuracy, writing and formal aspects of presentation.

Students must be able to express themselves fluently and correctly and demonstrate a high level of comprehension of academic texts. Students must demonstrate proficiency equivalent to level 2 (equivalent to C2). Before submitting evidence of learning, it is necessary to check that sources, notes, quotations and bibliographical references have been writtencorrectly in accordance with APA 7 guidelines.

Total or partial plagiarism of one of the assessment activities and/or copying in an assessment test is direct grounds for failing the course. Copying or plagiarism of any type of assessment activity constitutes a crime and will be penalised with a grade of 0 for the course, with no possibility of retaking it, whether it is an individual or group assignment (in this case, all members of the group will receive a 0).

Assessment activities will be returned and graded within a maximum of 20 working days after they have been handed in.

UNIQUE ASSESSMENT:

Students who opt for the single assessment must follow the course, attending classes regularly (a maximum of 20% of classes may be missed, both in large groups and in seminars). They must also follow the instructions set out in the previous section entitled 'Calculation of the subject mark'. However, THEY WILL NOT SUBMIT THE MONITORING ASSESSMENT ACTIVITIES UNTIL THE DAY OF THE FINAL ASSESSMENT. Therefore, THEY WILL NOT RECEIVE individualised feedback on the monitoring assessment activities during the course. In any case, they will be able to access general feedback, either during the feedback sessions for the whole class (on 16/12/2025 for group 61 and 17/12/2025 for group 62) or through the virtual campus, which will be organised by the group.

- Individual final written exam (45% of the final mark). The individual written test will take place on the single assessment day: 09-12-2025 (group 61) and 10-12-2025 (group 62). This is a resitable activity. The resit dates will be: 27/01/2026 (group 61) and 28/01/2026 (group 62).
- Group work (30% of the final mark). The work will be done individually and will be handed in on the single assessment day: 09-12-2025 (group 61) and 10-12-2025 (group 62). This assessment activity cannot be retaken.
- Group activities (10% of the final mark). The three practicals will be carried out individually and must be submitted on the day of the single assessment: 09-12-2025 (group 61) and 10-12-2025 (group 62). The assessment will be carried out entirely by the teacher. This assessment activity cannot be retaken.
- Individual space and shape questionnaire (15% of the final mark). It will take place on the day of the single assessment: 09-12-2025 (group 61) and 10-12-2025 (group 62). This activity can be retaken. The retake dates will be: 27/01/2026 (group 61) and 28/01/2026 (group 62).

ATTENTION RETAKERS:

THERE WILL BE NO SUMMARYASSESSMENT for this subject. Therefore, those who enrol for the second time may choose between continuous assessment or single assessment. In both cases, the conditions regarding attendance that will apply to them are the same as for the rest of the students enrolled in the subject. Therefore, we recommend that students who are repeating the subject ensure that they are available to attend it regularly, if necessary, avoiding enrolling in other subjects from other courses that are taught on the same day at the same time.

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Software

No specific software beyond is required. Students will use the usual ones (text editor, excel or similar, video editor,...).

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this link. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(SEM) Seminars	611	Catalan	first semester	morning-mixed
(SEM) Seminars	612	Catalan	first semester	morning-mixed
(SEM) Seminars	621	Catalan	first semester	afternoon
(SEM) Seminars	622	Catalan	first semester	afternoon
(TE) Theory	61	Catalan	first semester	morning-mixed
(TE) Theory	62	Catalan	first semester	afternoon