

Mathematics on the Early Childhood Education Curriculum

Code: 101986
ECTS Credits: 4

Degree	Type	Year	Semester
2500797 Early Childhood Education	OB	3	1

Contact

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Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Teachers

Maria Begoña Visus Vinue

Prerequisites

Despite not being any official prerequisites to enrol this course, it is strongly recommendable that students had already passed the annual subject of first course:

- Personality development

Objectives and Contextualisation

This course is for students that had been passed all the basic training.

This course is about specific didactics in mathematics, and is done simultaneously with other specific didactics courses. The main themes of the course are the knowledge of the mathematics curriculum in early childhood education, the main specific mathematical contents: logics and numbers, with special emphasis on the zero to three year old period.

The 4th year subject "Mathematical Practice in the Early Childhood Education Classrooms" has to be understood as the natural continuation of this course. Once all compulsory subjects of didactics in mathematics are passed, one has the possibility to enrol, in the very last semester of the degree, the subject entitled "Mathematical Games and Activities in Early Childhood Education".

Objectives of the course:

- 1.- To be familiar with the main topics of the curriculum in early age education in the period from zero to six years old, with special emphasis in mathematics.
- 2.- To be familiar with the mathematical contents of the curriculum in the periods from zero to three and from three to six years old: logics and numbers.
- 3.- To be familiar with the ways to engage mathematical activities from zero to six year old.
- 4.- To design situations of mathematical learning in the period from zero to three year old.

Competences

- Consider classroom practical work to innovate and improve teaching.
- Demonstrate knowledge and understanding of the aims, curricular contents and criteria of evaluation of Infant Education
- 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.
- Promoting experiences of initiation into information and communication technologies.
- Properly express oneself orally and in writing and master the use of different expression techniques.
- 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.

Learning Outcomes

1. Analyse a situation and identify its points for improvement.
2. Be able to communicate in writing by making a personal draft, having documented and referenced the texts consulted.
3. Be able to find and evaluate the relevance and adequacy of technologies for learning and knowledge for teaching and learning mathematics in kindergarten and nursery school.
4. Be able to locate and select mathematical content and learning objectives in the curriculum.
5. Be able to orally communicate synthesis of the most relevant aspects of a job using various technologies for learning and knowledge and in the required time.
6. Be able to select appropriate materials and situations for the nursery to promote learning and autonomy while respecting the uniqueness of each child.
7. Have the capacity to organize both personal and group work to perform the tasks required of the subject.
8. Know about professional support, physical and web-based resources.
9. Know of the structure, content, organization and utility of curricula of reference.
10. Propose new methods or well-founded alternative solutions.
11. Understand the diversity of materials and situations suitable for the development of mathematical thinking in kindergartens.
12. Understand the mathematical and didactic foundations of the curriculum for this stage regarding geometry and measurement.
13. Understand the mathematical and didactic foundations of the curriculum for this stage regarding logic and numbers.
14. Understand theories on the development of mathematical thinking in early childhood.

Content

This course is composed of three teaching units:

1.- Curriculum and mathematical contents in Early Childhood Education.

1.1. Official regulations (Real Decret 95/2022, of February 1, which establishes the organization and minimum teachings of Early Childhood Education and DECREE 21/2023, of February 7, on the organization of Early Childhood Education teachings).

1.2. Elements of the Curriculum and location of mathematics.

1.3. Theoretical-psychological framework of the teaching and learning of mathematics. Constructivist conception.

1.4. Development of mathematical thinking in kindergarten and its continuity.

1.5. Organization of the mathematical contents in the four fundamental blocks.

1.6. Logic: Attributes and collections. Relationships and change. Search for patterns.

2.- Development of mathematical logical reasoning in the first ages.

2.1. How mathematical logical reasoning is developed in the first ages, 0-3 and 3-6.

2.2. Materials for the logical development in kindergarten: unspecific material and other materials.

2.3. Situations from the first to the second year: the treasure chest and the heuristic game.

2.4. Situations of the second in the third year: trays of experimentation, situations of the daily life, the time of the food, corners, etc.

3.- Numbers and operations

3.1. Numbers and operations. Quantifiers.

3.2. Number construction. Reading and writing numbers. Actions on quantity -adding, taking out, grouping, dividing, repeating...

3.3. The decimal number system. Mental calculation. Automation of results.

Methodology

Activity	Time needed	Methodology
		Our teaching approach and assessment procedures may be altered in response to public gatherings for COVID-19.
Classroom activity Whole group	10	Lectures of the basic themes of the subject. It is done with the whole group. At the end of the session will usually finish with a brief explanation of the tasks to be done.
Seminars Reduced groups	20	Workspaces in reduced groups (50% of the whole group) with the aim of deepening in the concepts and themes they have dealt with.
Monitoring seminars Reduced groups	20	Workspaces in smaller groups where students present their work and receive feedback from the professor.
Personal work	50	Students have to look for references on their own to deepen the content. Moreover, they have to finish all the activities proposed by the professor.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Classroom activity, whole group and seminars	30	1.2	7, 4, 3, 5, 2, 6, 11, 9, 14, 8, 12, 13
Type: Supervised			
Individual or small group work	20	0.8	
Type: Autonomous			
Personal work	50	2	2, 9, 14, 8

Assessment

The CONTINUOUS evaluation will be carried out throughout the course by means of the activities shown below. Attendance in the face-to-face classes of the course is compulsory.

Activities of CONTINUOUS evaluation:

- 1) Individual written test (Contents of the teaching units from 1 to 3, readings. Contents of the workshops developed in the seminars. Contents of the group work). The control will take place the last week of the course (50% of the final grade).
- 2) Delivery and oral defense of the group work on an intervention in the classroom from 0 to 3 years old. The delivery will take place two weeks before the end of the course (25% of the final grade).
- 3) Delivery of the learning portfolio. A single delivery will be made the penultimate week (25%: 20% group work and 5% individual).

Evaluation activities	% grade	Hours	What and when?	
Individual written test	50%	2 on-site + autonomous	<p>Written test with questions related to the competency achievement of the subject (50% of the final grade). This written test includes questions on the contents of the teaching units 1 to 3; reading of proposed articles; contents of the workshops developed in the seminars; and contents of the group work.</p> <p>Individual writtentest at the end of all the teaching units of the course: 21-12-2023 (group 61) / 19-12-2023 (group 62).</p> <p>This activity is recoverable. The day of the recovery of the individual written test: 11/01/2024 (G61); 09/01/2024 (G62).</p>	It is necessary to obtain a minimum grade of 5 in each of the three evaluation activities to pass the course.
Group work	25%	4 on-site + autonomous	<p>The work will refer to children from zero to three years old (25% of the final grade).</p> <p>Each group will submit a single written paper and make an oral presentation to the follow-up seminar (or virtually, to be determined).</p> <p>The oral defense of the group work will be done: 7/12/2023 (G61) and 5/12/2023 (G62).</p> <p>This activity is not recoverable.</p>	The CONTINUOUS evaluation is carried out through GROUP and INDIVIDUAL activities:
Weekly work (Individual and group)	25% (5% individual + 20% en group)	20 on-site + autonomous	<p>The seminar practices will refer to the different topics of the course. At the end of all practices each group will release a single document containing the materials produced as a result of the practices of the seminars (20%) along with a final individual reflection of each group member of the learning process (5%).</p> <p>Continuous evaluation during the development of the seminars and summative evaluation at the end of all the teaching units of the course.</p> <p>The delivery will be made: 14/12/2023 (G61) and 12/12/2023 (G62).</p>	<p>I. Group evaluation.</p> <p>1. Group evaluation of the work on an intervention in the classroom from 0 to 3 years old.</p> <p>For this evaluation the following instruments are used:</p>

This activity is recoverable. It will have to be delivered the same day of the recovery of the individual written test: 11/01/2024 (G61); 09/01/2024 (G62).

- The written memory fruit of the theoretical and practical work in group. The final

report will be delivered in the penultimate week of the course: 7/12/2023 (G61) and 5/12/2023 (G62).

- Oral defenses of the group work. The defense will be done during the penultimate week of the course: 7/12/2023 (G61) and 5/12/2023 (G62).
- The technological support that they use to make their presentations (video) and that they will also deliver to the faculty the penultimate week of the course: 7/12/2023 (G61) and 5/12/2023 (G62).

The grade obtained in this group evaluation represents 25% of the final grade of the course. A minimum grade of 5 is required to pass the course. This work, being practical and applied, is not recoverable, there is no recovery activity.

2. Group evaluation of the Learning Portfolio.

- Delivery of the learning portfolio that collects the development of the practices of the seminar. A single delivery of the group must be done the week before the final exam of the course: 14/12/2023 (G61) and 12/12/2023 (G62).

The grade obtained in this group evaluation represents 20% of the final grade of the course. A minimum grade of 5 is required to pass the course. This group work can be recovered and must be handed in the same day of the final exam recovery: 11/01/2024 (G61); 09/01/2024 (G62).

3. Individual Evaluation.

In this part the scientific and technical knowledge of the subject acquired by the students is evaluated individually.

- 1. A part of the individual evaluation is the delivery of the individual learning of each block of contents of the learning portfolio (5% of the final grade). It will be delivered together with the learning portfolio the penultimate week: 7/12/2023 (G61) and 5/12/2023 (G62).
- Another part of the individual written test will be carried out by individual written test (50% of the final grade). It will take place in the last week of the course: 21/12/2023 (G61); 19/12/2023 (G62).

The content of the individual written test includes everything done during the course: teaching units, group work, seminars, and readings.

The grade obtained in the individual evaluation will represent 55% of the final grade of the course (5% of the individual learning of each content block of the portfolio and 50% of the final written test).

It is necessary to obtain a minimum grade of 5 out of 10 in the final written exam and in the rest of the evaluation activities that can be recovered in order to pass the course. The date of the final exam will be: 21/12/2023 (G61); 19/12/2023 (G62).

In case of failure of the individual written test and of the evaluation activities that can be made up, a recovery is foreseen that can allow the student to obtain a passing grade. The dates of the recovery will be: 11/01/2024 (G61); 09/01/2024 (G62)

SINGLE EVALUATION. Evaluation activities

1. Individual written test (Contents of the teaching units from 1 to 3. Contents of the workshops developed in the seminars. Contents of the group work). The individual written test will be done the day of the

- single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62) (50% of the final grade). It is a make-up activity. The dates of the recovery will be: 11/01/2024 (G61); 09/01/2024 (G62).
2. Delivery and oral defense of the individual work on an intervention to the classroom from 0 to 3 years old. The delivery will take place on the day of the single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62) (25% of the final grade). It is not a recoverable activity because of its theoretical-practical character.
 3. Delivery and oral defense of the learning portfolio that collects the development of the practices of the seminar. A single delivery of the group will have to be done the week before the final exam of the course. The delivery will take place on the day of the single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62) (25% of the final grade). This evaluation activity is recoverable. The dates of the recovery will be: 11/01/2024 (G61); 09/01/2024 (G62).

Individual evaluation of the work on an intervention in a classroom from 0 to 3 years old.

The following instruments are used for this evaluation:

- The written memory fruit of the theoretical and practical individual work. The final report will be released on the day of the single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62).
- The oral defense of the individual work. The defense will be held on the day of the single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62).
- The technological support that you use to make your presentations (video) and that you will release also the day of the single evaluation: 21/12/2023 (G61) and 19/12/2023 (G62).

The grade obtained from this work on an intervention in the classroom from 0 to 3 years represents 25% of the final grade of the course, but it is necessary to get a minimum grade of 5 to pass the course. This work, being practical and applied, is not recoverable and lacks recovery.

It is necessary to obtain a minimum grade of 5 out of 10 in each of the three evaluation activities to pass the course.

In case of failing the portfolio and/or the final test, the same recovery system will be applied as for the continuous evaluation students. The dates of the recovery will be: 11/01/2024 (G61); 09/01/2024 (G62).

In the single evaluation, 100% of the final grade corresponds to individual evaluation: (50% final written test, 25% of the written work and the defense of the work on an intervention in the classroom from 0 to 3 years old and 25% defense and development of the practices of the 3 blocks of contents in the Learning Portfolio).

For the single and continuous evaluation:

In order to pass this subject, it is necessary that the student shows a good general communicative competence, oral and written, and a good command of the vehicular language stated in the teaching guide. In all activities (individual and group) will be taken into account, therefore, linguistic correctness, writing and formal aspects of presentation.

Students must be able to express themselves fluently and correctly and show a high degree of comprehension of academic texts. The student will have to show a competence equivalent to level 2 (equivalent to C2). Before releasing an evidence of learning, it is necessary to check that sources, notes, textual citations and bibliographical references have been correctly written following the APA norms.

Total or partial plagiarism of one of the evaluation activities and/or copying in an evaluation test is a direct reason for failing the course. Copying or plagiarism of any type of evaluation activity is an offense, and will be penalized with a 0 as a grade for the course, losing the possibility of recovering it, whether it is an individual or group work (in this case, all members of the group will have a 0).

Class attendance is compulsory: the student must attend all the classes to be evaluated (a maximum of 20% of incidences in the classes is contemplated, both in the large group classes and in the seminars).

The return and grading of the evaluation activities will be done a maximum of 20 working days after they have been released.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Final Exams (individual)	50%	0	0	1, 2, 9, 12, 13, 10
Group works	25%	0	0	1, 7, 4, 3, 5, 2, 6, 11, 14, 8, 10
Work in seminars (5% individually and 20% groups)	25%	0	0	1, 7, 3, 5, 2, 14, 10

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Software

No specific software is used.