# Mathematical Practice in the Early Childhood Education Classrooms

**2016/2017**

Code: 101987
ECTS Credits: 4

| Degree | Type | Year | Semester |
|---|---|---|---|
| 2500797 Early Childhood Education | OB | 4 | 1 |

## Contact

Name: Montserrat Prat Moratonas

Email: Montserrat.Prat@uab.cat

## Use of languages

Principal working language: catalan (cat)

Some groups entirely in English: No

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

## Other comments on languages

AQUESTA GUIA ESTÀ PENDENT DE REVISIÓ LINGÜÍSTICA

## Prerequisites

It is necessary that the student has passed and uses the contents of the third compulsory subject:
- Mathematics at the childhood education curriculum.

## Objectives and Contextualisation

"Mathematical practice in the childhood classroom" is the natural continuation of the subject "Mathematics at the childhood education curriculum" done the previous year. The new course develops practical knowledge and the application of childhood mathematical curriculum. It focuses on knowledge, analysis and design of educational situations for teaching and learning mathematics in early childhood education, with special emphasis on kindergarten and recovering what had been learned from the stage 0-3.

That is why from the subject: Mathematical practice in the childhood classroom, it is very important to stress in the ability to link and integrate the knowledge the students are acquiring in different subjects to obtain a global and interdisciplinary vision of teaching in the early ages.

**Educational objectives:**

1. Analyze the teaching situations according to the parameters of the theory and curriculum to make a diagnosis on their membership and adequacy.
2. Knowing the curricular mathematical content from 0 to 6 years: geometry, measurement and data analysis.
3. Know and be able to analyze interdisciplinary teaching situations, identifying the mathematical content and the content of other areas that work.
4. Design didactic teaching situations and mathematical learning for children 3 to 8 years.

## Skills

- Consider classroom practical work to innovate and improve teaching.

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

## Content

This course consists of five teaching units.
1. Educational and professional analysis of cases and classroom situations.
    1.1 General Aspects: Psychological Theoretical Framework. Focus.
    1.2 Particular aspects: Content, objectives, capabilities, activities, materials, grouping children, instructions, adult role, evaluation system.
2. Mathematics in interdisciplinary and globalizing situations.
    2.1 What do we mean by interdisciplinary and globalizing situation? Examples and analysis of a situation.
    2.2 Search and analysis of other situations. Math and: play, motor skills, visual and plastic arts, children's literature, musical expression, natural and social environment.
3. Geometry.
3.1 Forms 3D and 2D.
3.2. Location and orientation in space. Location and relative positions. Flat representations into space.
4. Measure.
4.1. Magnitudes and measurement. Compare and sort items. Identify magnitudes. Measurement units. Length, volume and mass. Measuring instruments.
4.2. The measurement of time. Temporal sequences. Using the calendar.
5. Data Analysis,
5.1. Data Collect. Representation of information and simple graphics.
5.2. Analysis and interpretation of data.

## Methodology

Considering that the protagonist in the process of teaching and learning is the student. The methodology of the course has been planned as shown in the table below:

| Activitat | Hores | Metodologia |
| --- | --- | --- |

| Presencial: large group. | 10 | Teacher exposition of contents and basic issues from the list of topics of the course. It is done with the whole group class. The teacher presents the content of the course to foster an open i active participation by students. |
|---|---|---|
| Seminars | 20 | Workspaces in small groups (group 1/2), supervised by the teacher. The purpose is by analyzing documents, case solving or various activities get deep into the contents and thematic worked in the large group. |
| Supervised and assessment | 20 | Spaces reserved for presenting the results of team work. The presentations of the results will be done in front of the other students. There will be a co-assessment among students, in addition to teacher evaluation. |
| Autonomous student work | 50 | Preparing of the recommended readings, that complement the work that has to be done. Writing up the texts that will be discuss and consensus on the seminars. Preparing presentations, and examination. |

## Activities

| Title | Hours | ECTS | Learning outcomes |
|---|---|---|---|
| **Type: Directed** | | | |
| Presencial: large group and seminars | 30 | 1.2 | |
| **Type: Supervised** | | | |
| Supervised | 20 | 0.8 | |
| **Type: Autonomous** | | | |
| Autonomous student work | 50 | 2 | |

## Evaluation

The evaluation of the course will take place throughout the academic course through the activities shown in the table below. The attendance at the classes is compulsory .

| Evaluation activities | % of the mark | Apprenticeship results |
|---|---|---|
| Handing over and presentation of the team work. | 30% | EI.2; EI.3; DDIC.2; DDIC.3; TF.3 |
| Individual writing test (Units from 1 to 5. Readings. Seminars. Team work) | 50% | |

| | | | DDIC.1; DDIC.3; EI.5; EI.20 |
| :--- | :--- | :--- | :--- |
| Seminar practices + participation | | 20% | EI.2; EI.3; DDIC.2; DDIC.3; TF.3 |

The evaluation will be done partly in groups and partly individually.

**Evaluation in groups.**

For the evaluation in groups we have the following instruments:

a) The documents submitted by the groups of students fruit of their theoretical or practical work. Folder work and classroom practices.

b) The oral defenses of group work.

c) The technology supports use in their presentations (power point, video, etc.) and also delivered to teachers.

The mark obtained in this group assessment represents 50% of the final grade for the course. To obtain a pass in the final mark is essential to pass (minimum mark of 5 out of 10) of the assessment of the group work.

**Individual evaluation.** In this part is individually evaluated the scientific and technical knowledge achieved by the students.
The individual assessment is carried out through a written individual evaluation session test.
In the individual assessment can be evaluated everything that has been done during the course: teaching units, group work, seminars and / or lectures.
The mark obtained in the individual assessment represents 50% of the final grade for the course. To obtain a pass in the final mark is essential to pass (minimum mark of 5 out of 10) of the assessment of the group work.
**La asistencia a clase es obligatoria:** el estudiante debe asistir a todas las clases para ser evaluado (se contempla un máximo de un 20% de incidencias), en caso contrario se considerará no presentado.
**In accordance with UAB regulations, plagiarism or copying of any individual or group paperwill be penalised with a mark of 0 for that paper, without any possibility of a re-sit. During thecompletion of a paper or the individual exam in class, if the teacher has reason to believethat a student is trying to copy or s/he discovers any kind of non-authorised document or device,the student involved will obtain a mark of 0, without any possibility to re-sit.**
**To obtain a pass in the final mark for this module it is essential to pass (minimum mark of 5 out of 10) each ofthe assessment blocks: group work, written exam and individual work.**

## Evaluation activities

| Title | Weighting | Hours | ECTS | Learning outcomes |
| :--- | :--- | :--- | :--- | :--- |
| Examination | 50% | 0 | 0 | 1, 4, 8, 9, 7, 6 |
| Seminar practices & participation | 20% | 0 | 0 | 1, 2, 4, 5, 8, 9, 6 |
| Team work | 30% | 0 | 0 | 2, 3, 5, 8, 7, 6 |

## Bibliography

LESSON 1/2

Edo, M.; Revelles, S. (2004). Situaciones matemáticas potencialmente significativas. Dins: M. Antón, i B. Moll, (eds.), Educación infantil. Orientación y Recursos (0-6 años), (pp.103-179). Barcelona: Praxis.

Edo, M (2005). Educación matemática versus Instrucción matemática en Infantil. A P.Pequito.; A.Pinheiro (eds.), Proceedings of the First International Congress on Learning in Childhood Education (pp.125-137). Pporto, Portugal: Gailivro.

LESSON 3

Edo, M.; Revelles, S. (2006). Taller de geometria, recorrido geométrico, y duda que nos conduce a la medida en el ciclo inicial. En C. Tomás, M. Casas (Eds.) Educación Primaria. Orientaciones y Recursos. Desarrollo Curricular, Experiencias. (pp.1-22) Barcelona: Praxis.

Castelnouvo, E. (1981). La Geometria.Barcelona:Ketres.

LESSON 4

Febrer, M.; Casas, E. (2001). Una balena pesa més que 100 persones "¡Y yo que me lo creo!". Biaix 19, 50-56.

Reggio Emilia (2005). Sabata i metre. Associació de mestres Rosa Sensat.

LESSON 5

Masoliver, C.; Edo, M. (2009). Todos nuestros zapatos tienen números. A: N. Planas i i A. Alsina (Eds.) Educación matemática y buenas prácticas, (pp. 81-92). Barcelona: Graó.

There will be specific literature for each work on the virtual campus.