Mathematics for Teachers

Code: 102055
ECTS Credits: 6

Degree	Type	Year	Semester
2500798 Primary Education	OB	1	2

Contact

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Teachers

Núria Gorgorió Solà

Lluis Albarracin Gordo

External teachers

The teacher of two of the groups has yet to be established

Use of languages

Principal working language: catalan (cat)

Some groups entirely in English: Yes

Some groups entirely in Catalan: Yes

Some groups entirely in Spanish: No

Prerequisites

To follow the course it's required to have a good level in basic mathematics.

Objectives and Contextualisation

It is a basic subject of disciplinary content. Its purpose is to consolidate fundamental mathematical knowledge through various methodologies: problem solving, research and projects, among others. Consolidated progress in this subject should serve as a basis for the construction of of the teaching of mathematics throughout the degree. The fundamental mathematical knowledge built up in this subject is what will enable future teachers to guide Primary Education students towards the achievement of the mathematical competencies of the stage.

The following are specific objectives of the course:

- Manage the initial mathematical knowledge to bring it closer to the fundamental mathematical knowledge needed to be a teacher.
- Contextualize mathematical knowledge in the professional work of the mathematics teacher.
- To counter mechanistic learning of mathematics to construction of knowledge.
- Establish connections between different mathematical concepts and between mathematical concepts and concepts from other areas of knowledge.
- Understand math as a valuable problem-solving tool beyond the mathematics classroom.

Skills

- Acquire basic mathematics skills (numerical skills, calculation, geometry, spatial representations, estimation and measurement, organisation and interpretation of information, etc.).
- Design and regulate learning spaces in contexts of diversity that take into account gender equality, equity and respect for human rights and observe the values of public education.
- Develop autonomous learning strategies.
- Incorporate information and communications technology to learn, communicate and share in educational contexts.
- Know and apply information and communication technologies to classrooms.
- Maintain a critical and autonomous relationship with respect to knowledge, values and public, social and private institutions.
- Posing and solving problems related to daily life.
- Stimulate and value effort, constancy and personal discipline in pupils.
- Value the relationship between mathematics and sciences as one of the pillars of scientific thought.

Learning outcomes

1. Being able to solve problems involving the connection between different blocks of content.
2. Critically analyse mathematical texts, activities and other proposals for education.
3. Demonstrate knowledge of the fundamental concepts and properties of number systems, plane and space geometry, measurement and data treatment.
4. Exploit situations from a particular scientific field to show the utility of mathematical content.
5. Find information using technologies for learning and knowledge resources in mathematics.
6. Identifying problem situations drawn from other sciences that can be modelled mathematically.
7. Posing problems in order to introduce relevant mathematical concepts and results.
8. Resolving problems independently.
9. Resolving problems involving names, geometry and measurement in a variety of situations including those from everyday life.
10. Using software tools and specific maths programs for estimating, demonstrating and communicating mathematical results.
11. Using virtual platforms as a communication and management tool for directed and supervised activities.

Content

1. Geometry to understand space.

Elementary geometric constructions. Plain representation of space.

2. Numbers to count and calculate.

Natural numbers. Decimal numbering system. Divisibility.

3. Measure to know the environment.

Concept of magnitude. Proportionality.

4. Data for interpreting reality.

Organization, interpretation and visualization of data. Probability

The following are considered transversal contents relevant to all the content mentioned before:

5. Visualisation and representation of ideas and mathematical concepts.

6. Problem solving.

7. Patterns and relationships.

Methodology

The teaching proposal is based on a methodology of active work and classroom practice. At the same time, the student must punctually carry out the proposed tasks to adequately follow the teaching of the subject.

In addition, the student is expected to autonomously assume responsibility for expanding his/her basic mathematical knowledge.

Activity analysis and Problem solving

Working sessions in small or large groups where problems are solved and situations are analysed in relation to the mathematical contents involved in the subject. The students responsible for the assignment will present their work orally and the teacher will validate the mathematical knowledge that is involved with the active participation of the rest of the students.

Master classes

Presentation by the teacher of the main contents of the course in which students are expected to actively participate.

Practices

Group work sessions where research activities are proposed that students solve under the guidance of their teacher.

Activities

Title	Hours	ECTS	Learning outcomes
Type: Directed			
Classrom practice	30	1.2	2, 5, 6, 1, 10, 11
Master class	45	1.8	2, 4, 6, 7
Projects development and problem solving	75	3	2, 4, 3, 6, 7, 8, 9, 1

Evaluation

Test of Fundamental Mathematical Knowledge as a requirement for the evaluation:

During the course the student must obtain a minimum score of 7 out of 10 on a test of Fundamental Mathematical Knowledge. Students will have three opportunities: at the beginning, middle and end of the semester.

The purpose of the test is to verify that the student has reached a good level of basic mathematics, which are a prerequisite for the evaluation of the subject. When after three opportunities the student fails to pass the minimum grade established, the overall grade of the course will be a 3.

Description of the evaluation activities:

For each of the blocks in which the teaching is organized (organization of data, numbers, geometry, proportionality and measurement) an activity will be carried out to track the progress of the student in the block.

At the beginning of each block, it will be specified what the follow-up evaluation activity will be - individual follow-up test, list of problems, project report, research practice report, etc. The individual follow-up test and/or deliveries of the block follow-up evaluation activities will take place one week after the end of the block.

Planning, resolution and reporting of activities and/or problems: Problems and other mathematical activities will be proposed to work in the seminars.

Practice. Two practical activities to be developed in small groups linked to the resolution of mathematical situations in context will be proposed.

Individual block tracking test: Some of the blocks may be evaluated with a written individual test.

Final exam: A final individual exam will take place one week after the end of the course. The date is expected to be 18 or 20 June 2019 depending on the day of the teaching week (Tuesday or Thursday). In any case, this date will be confirmed in the middle of the course.

Make-up exam: Students who have a grade of more than 3.5 but do not achieve a grade of 5 in the final exam may take a make-up test. The make-up exam will take place two weeks after the final test, expected on 2 or 4 July.

In order to be eligible for the calculation of the weighted average with the other grades of the course, the student must have obtained a minimum score of 5 in the final test or in the make-up test. If the student does not achieve the minimum required score in the make-up test, the overall grade of the course will be a 3.

The student should also take into account the following policy considerations regarding assessment:

- The overall grade of the course is the weighted average of the grades of the five block follow-up evaluation activities and the grade obtained in the final exam or in the make-up exam. If the result of the weighted average does not reach 5, the overall grade of the subject will be 3.

- The weighting of each of the five block monitoring evaluation activities is 10%. There will be no make-up activities or tests of the tracking of the blocks.

- The final test of the course (or the make-up test if applicable) will be weighted at 50%.

- All evaluation activities are mandatory.

- The evaluation activities of the blocks must be delivered within the established deadlines. Activities not delivered count as a 0 in the calculation of the average.

- The score of the group work is not necessarily the individual score of each of the members of the group.

- The copy or plagiarism of material in any evaluation activity implies a 0 as a global grade of the subject.

- The course has a face-to-face character.

Evaluation activities

Title	Weighting	Hours	ECTS	Learning outcomes
Individual written tests	50	0	0	3, 8, 9, 1
Plannning, solving and reporting of problems and/or activities	30	0	0	5, 3, 7, 8, 9, 1, 10, 11
Practices	20	0	0	2, 4, 5, 6

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