

Course Unit	Didactics of Mathematics in the 2nd Cycle of Basic Education		Field of study	-	
Master in	Teaching of the First Cycle, Mathematics and Natural Sciences in the Second Cycle		School	School of Education	
Academic Year	2023/2024	Year of study	2	Level	2-2
Type	Semestral	Semester	1	ECTS credits	5.0
Code	5044-763-2101-00-23				
Workload (hours)	135	Contact hours	T -	TP 35	PL -
			TC -	S -	E -
			OT 10	O -	

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s) Maria Cristina do Espírito Santo Martins

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:

1. Identify components of mathematics teacher professional knowledge in the context of the 2nd cycle of basic education.
2. Problematize relevant didactical aspects in the mathematics teaching and learning.
3. Substantiate teaching and learning sequences.
4. Justify the role of mathematical abilities and mathematical topics in the curriculum.
5. Select instructional approaches for teaching mathematical abilities and curricular mathematical topics.
6. Identify the most common difficulties in learning mathematics.
7. Analyze didactical situations, communicating their own ideas and interpreting the other people's ideas.

Prerequisites

Before the course unit the learner is expected to be able to:

1. Relate and use mathematical concepts.
2. Relate and use concepts related to science education.
3. Read and interpret mathematical information.

Course contents

1. Mathematics teacher professional knowledge in the 2nd cycle of basic education.
2. Topics of mathematics learning and teaching.
3. Curriculum guidelines, curricular management and planning.
4. Teaching mathematical abilities in the 2nd cycle.
5. Teaching algebra, numbers, statistics and probabilities in the 2nd cycle.
6. Teaching geometry and measurement in the 2nd cycle.

Course contents (extended version)

1. Mathematics teacher professional knowledge in the 2nd cycle of basic education.
2. Topics of mathematics learning and teaching.
 - Management of the classroom.
 - Curriculum materials.
3. Curriculum guidelines, curricular management and planning.
 - Teaching and learning sequences. Teaching units.
4. Teaching mathematical abilities in the 2nd cycle.
 - Mathematical abilities in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.
5. Teaching algebra, numbers, statistics and probabilities in the 2nd cycle.
 - Algebra, numbers, statistics and probabilities in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.
6. Teaching geometry and measurement in the 2nd cycle.
 - Geometry and measurement in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.

Recommended reading

1. Grupo de Trabalho de Investigação. (Org.) (2017). A prática dos professores: Planificação e discussão coletiva na sala de aula. Associação de Professores de Matemática.
2. Martins, C. (2011). O desenvolvimento profissional de professores do 1.º CEB: Contributo da participação num programa de formação contínua em matemática. Universidade de Lisboa.
3. Ministério da Educação. (2021). Aprendizagens essenciais de matemática. Ministério da Educação, Direção-Geral da Educação.
4. National Council of Teachers of Mathematics. (2017). Princípios para a ação: Assegurar a todos o sucesso em matemática. Associação de Professores de Matemática.
5. Pires, M. V. (2006). Os materiais curriculares na construção do conhecimento profissional do professor de matemática: Três estudos de caso. Universidade de Santiago de Compostela.

Teaching and learning methods

1. Content exploration using, for example, explanation processes, texts discussions, writing reports or researching work.
2. Discussions of themes in small or large groups.
3. Individual or group work.
4. Resolution of tasks of different type and nature.

Assessment methods

1. Continuous assessment - (Regular, Student Worker) (Final)
 - Intermediate Written Test - 50% (Written summative test.)
 - Work Discussion - 50% (Implementation and discussion of the proposed tasks or the individual or group works.)
2. Assessment by examination - (Regular, Student Worker) (Supplementary, Special)
 - Final Written Exam - 100%

Language of instruction

Portuguese

Electronic validation			
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02-01-2024	13-01-2024	14-02-2024	18-02-2024

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