

Course Unit	-		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	1	Level	2-1
Type	Semestral	Semester	2	ECTS credits	5.0
Code	5044-763-1206-00-23				
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. Relate and apply algebraic and numerical concepts, representations and procedures in diversified contexts.
2. Relate and apply geometric concepts, representations and procedures in diversified contexts.
3. Relate and apply statistical concepts, representations and procedures in diversified contexts.
4. Use mathematical processes in diversified contexts.
5. Solve mathematical problems, 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. Read and interpret mathematical information.

Course contents

1. Algebraic and numerical topics.
2. Geometric topics.
3. Statistical topics.
4. Mathematical processes.

Course contents (extended version)

1. Algebraic and numerical topics.
 - Algebraic structures.
 - Axiomatic of natural numbers.
 - Real numbers. Operations in \mathbb{R} . Properties.
 - Elements of discrete mathematics.
 - Direct proportionality.
2. Geometric topics.
 - Reductions and enlargements.
 - Magnitude as a commutative and orderly semigroup.
 - Measurement or calculation processes of different magnitudes.
3. Statistical topics.
 - Statistical investigation.
 - Probabilities.
4. Mathematical processes.
 - Argumentation in mathematics. Structure and characteristics of an argument. Proof.
 - Mathematical modeling.

Recommended reading

1. Boavida, A. , Paiva, A. , Cebola, G. , Vale, I. , & Pimentel, T. (2008). A experiência matemática no ensino básico. DGIDC, Ministério da Educação.
2. Caraça, B. J. (1998). Conceitos fundamentais da matemática. Gradiva.
3. Palhares, P. (Coord.) (2004). Elementos de matemática para professores do ensino básico. Lidel.
4. Palhares, P. , Gomes, A. , & Amaral, E. (Coords.) (2011). Complementos de matemática para professores do ensino básico. Lidel.
5. Ponte, J. P. , Branco, N. , & Matos, A. (2009). Álgebra no ensino básico. DGIDC, Ministério da Educação.

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