

Course Unit	Topics in Mathematics		Field of study	Teaching Area	
Master in	-		School	School of Education	
Academic Year	2023/2024	Year of study	1	Level	2-1
Type	Semestral	Semester	1	ECTS credits	5.0
Code	5008-739-1107-00-23				
Workload (hours)	135	Contact hours	T -	TP 36	PL -
			TC -	S -	E -
			OT 9	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 geometric concepts, representations and procedures in diversified contexts.
2. Relate and apply numerical concepts, representations and procedures in diversified contexts.
3. Use mathematical processes in diversified contexts.
4. 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. Geometric topics. 2. Numerical topics. 3. Transversal mathematical skills.

### Course contents (extended version)

1. Geometric topics.
  - Topological notions.
  - Symmetry.
  - Friezes, rosettes, patterns, tessellations.
2. Numerical topics.
  - Number sense.
  - Rational numbers.
  - Algorithms of numerical operations.
  - Sequences and numerical regularities.
3. Transversal mathematical skills.
  - Mathematical communication; mathematical connections; and mathematical representations.
  - Computational thinking; mathematical reasoning; and problem solving.

### Recommended reading

1. Palhares, P. , Gomes, A. , & Amaral, E. (Eds. ) (2011). Complementos de matemática para professores do ensino básico. Lidel.
2. Veloso, E. (2012). Simetria e transformações geométricas. Associação dos Professores de Matemática.
3. Palhares, P. (Eds. ) (2004). Elementos de matemática para professores do ensino básico. Lidel.
4. Breda, A. , Serrazina, L. , Menezes, L. , Sousa, H. , & Oliveira, P. (2011). Geometria e medida no ensino básico. DGIDC, Ministério da Educação.
5. National Council of Teachers of Mathematics. (2017). Princípios para a ação: Assegurar a todos o sucesso em matemática. Associação de Professores de Matemática.

### 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 individual or group works.)
2. Assessment by examination - (Regular, Student Worker) (Supplementary, Special)
  - Final Written Exam - 100%

### Language of instruction

Portuguese, with additional English support for foreign students.

### Electronic validation

Maria Cristina do Espírito Santo Martins	Manuel Celestino Vara Pires	Pedro Alexandre Oliveira Couceiro	Carlos Manuel Costa Teixeira
02-01-2024	13-01-2024	15-01-2024	09-02-2024