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| 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 |
| Type | Semestral | Semester | 2 |
| Level | 2-1 | ECTS credits | 5.0 |
| Code | 5044-763-1202-00-23 | | |
| 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 1st cycle of basic education.
2. Substantiate teaching and learning sequences.
3. Justify the role of mathematical abilities and mathematical topics in the curriculum.
4. Select instructional approaches for teaching mathematical abilities and curricular mathematical topics.
5. Identify the most common difficulties in learning mathematics.
6. Analyze didactic 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 educational sciences.
3. Read and interpret mathematical information.

Course contents

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

Course contents (extended version)

1. Mathematics teacher professional knowledge in the 1st cycle of basic education.
2. Curriculum guidelines, curricular management and planning.
 - Types of planning.
 - Teaching and learning sequences.
3. Teaching mathematical abilities in the 1st cycle.
 - Mathematical abilities in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.
4. Teaching algebra, numbers and operations in the 1st cycle.
 - Algebra, numbers and operations in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.
5. Teaching geometry and measurement in the 1st cycle.
 - Geometry and measurement in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.
6. Teaching statistics and probabilities in the 1st cycle.
 - Statistics and probabilities in the curriculum.
 - Teaching approaches, learning difficulties, learning assessment.

Recommended reading

1. 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.
2. Ministério da Educação. (2021). Aprendizagens essenciais de matemática. Ministério da Educação, Direção-Geral da Educação.
3. National Council of Teachers of Mathematics. (2017). Princípios para a ação: Assegurar a todos o sucesso em matemática. Associação de Professores de Matemática.
4. 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.
5. Ponte, J. P. (2014) (Org.). Práticas profissionais dos professores de matemática. Instituto de Educação da Universidade de Lisboa.

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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| Maria Cristina do Espírito Santo Martins | Manuel Celestino Vara Pires | Adorinda Maria Rodrigues Pereira S. Gonçalves | Carlos Manuel Costa Teixeira |
| 02-01-2024 | 13-01-2024 | 14-02-2024 | 18-02-2024 |