INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Quantities and Measurements		Field of study	Training in Teaching Area	
Bachelor in	Basic Education		School	School of Education	
Academic Year	2022/2023	Year of study	3	Level	1-3	ECTS credits	6.0

Type	Semestral	Semester	1	Code	9853-531-3104-00-22

Workload (hours)	162	Contact hours	T	-	TP	54	PL	-	TC	-	S	-	E	-	OT	18	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)	Manuel Celestino Vara Pires, Cristina MArcela Cordeiro Seabra

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Identify measurement concepts and procedures in diversified contexts.
2. Relate measurement concepts and procedures in diversified contexts.
3. Apply measurement concepts and procedures in diversified contexts.
4. Work independently, researching, collecting, interpreting and presenting information.
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. Read and interpret mathematical information.
2. Relate and use basic measurement concepts.

Course contents

1. Magnitudes. 2. Measure. 3. Systems of units. 4. Estimation. Measurement processes. Calculation processes. 5. Applications.

Course contents (extended version)

1. Magnitudes.
   - Concept of magnitude.
   - Types and examples of magnitudes.
2. Measure.
   - Experimental processes.
   - Mathematical processes, measure as an application.
3. Systems of units.
   - International system of units.
4. Estimation. Measurement processes. Calculation processes.
   - Direct processes, indirect processes.
   - Measuring instruments.
   - Formulas for calculating measures.
5. Applications.
   - Perimeter and area of geometric figures.
   - Volume, capacity, mass. . . of geometric solids.
   - Range of angles, money. . .

Recommended reading

1. Breda, A., Serrazina, L., Menezes, L., Sousa, H., & Oliveira, P. (2011). Geometria e medida no ensino básico. DGIDC, Ministério da Educação.
2. Caraça, B. J. (1998). Conceitos fundamentais da matemática. Gradiva Publicações.
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. Palhares, P. , Gomes, A., & Amaral, E. (Coords.) (2011). Complementos de matemática para professores do ensino básico. Lidel.
5. Pires, M. V. (1995). Os conceitos de perímetro e área em alunos do 6. º ano de escolaridade: Conceções e processos de resolução de problemas. 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 - 30% (Written summative test.)
   - Intermediate Written Test - 30% (Written summative test.)
   - Work Discussion - 40% (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

Manuel Celestino Vara Pires	Maria Cristina do Espírito Santo Martins	Elza da Conceição Mesquita	Carlos Manuel Costa Teixeira
12-12-2022	19-12-2022	20-12-2022	04-01-2023