INSTITUTO POLITÉCNICO DE BRAGANÇA

Course Unit	Biosystematic			Field of study	Biology and Biochemistry								
Bachelor in	Agronomic Engineering			School	School of Agriculture								
Academic Year	2022/2023	Year of study	1	Level	1-1	ECTS credits	6.5						
Type	Semestral	Semester	2	Code	9086-307-1202-00-22								
Workload (hours)	175,5	Contact hours	T 30	TP -	PL 45	TC -	S -	E -	OT 20	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): Carlos Francisco Gonçalves Aguiar, Maria José Miranda Arabolaza

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
Understand the strucutre and function of plant organs and the morphological, ecological and physiological characteristics of main animal groups. Identify the plants of greater economical interest.

Prerequisites

Before the course unit the learner is expected to be able to:
None

Course contents

THEORETICAL - Morphology and reproduction of seed plants. Taxonomy and nomenclature. Systematic of seed plants. Economic Botany. The Animal Kingdom. Biodiversity theories. Species and speciation concepts. Phyla Platyhelminthes, Nematoda, Mollusca, Annellida, Arthropoda and Chordata. PRACTICES - Morphological characters and identification of vascular plants families. Internal and external morphology of the animal phyla.

Course contents (extended version)

1. Form and reproduction in seed plants The shape of the seed plants
   - Introduction. Major morphological and functional characteristics of plants
   - Vegetative system: root, stem, leaf. Vegetative body of grasses
   - Reproductive system. Angiosperms. Inflorescence. Flower. Fruit. Seed. Gymnosperms
   - Phenological cycles
2. Life cycles and reproductive biology of seed plants
   - Introduction to life cycles of plants. Fundamental concepts and typology.
   - Reproductive biology of gymnosperms
   - Reproductive biology of angiosperms
3. Taxonomy and nomenclature. Introductory concepts. Objectives of systematic botany
   - Nomenclature: Bases of nomenclature. Taxonomic categories. Code of Botanical Nomenclature
   - Classification systems
4. Systematics of seed plants Gymnosperms (Gymnospermae)
   - Pinopsida
5. Angiosperms(Angiospermae)
   - Basal angiosperms. Magnolie. Monocots. Eudicots
6. Economic Botany Types of cultivated plants Classification of cultivated plants
7. Domestication ofcultivated plants Characteristics and origin of cultivated plants
8. Tha cultivated plants
9. The Animal Kingdom.
   - Bases of Animal Systematics. Plans of organization. Value embryological characters
10. Theories of biodiversity
    - Lamarckism and Darwinism. Arguments of Evolutionism. Species concept and speciation
11. Animal diversity
    - Phylum Platyhelminthes. Morphology and reproduction of flatworms. Life cycles of the class Trematoda
    - Phylum Nematoda. Distinctive features. Life cycle of parasitic nematoda
    - Phylum Mollusca. General morphology. Class Bivalvia Class Gastropoda. Class Cephalopoda
    - Phylum Annelida. Morphology, reproduction and ecological aspects
    - Phylum Arthropoda. The conquest of the land environment. General characteristics. Class Insecta
    - Phylum Chordata. General characteristics and evolutionary aspects of the Chordata. Vertebrates

Recommended reading

1. BOTÂNICA - Izco, J. (ed.) (2004) Botánica. McGraw-Hill.
2. Aguiar, C. (2011) Botânica para Ciências Agrárias e do Ambiente. IPB (ciclos.) Castroviejo, S. et al. (eds.) (1986-2003) Flora Ibérica. Real Jardín Botánico de
3. ZOOLOGIA - Hickman, Roberts, Keen, Eisenhour, Larson & L'Anson (2010). Principles Integrated of Zoology 15ªed. McGraw-Hill
4. Brusca, R. C. & G. J. Brusca, 2005. Invertebrados. McGraw-Hill Interamericana, 2ª ed. Gullan, P. J. & P. S. Craston (2005) The insects. An outline of Entomology. Blackweel Publishing, 3ª ed
5. Aguiar, C. (2020) Estrutura e Biologia de Plantas; (2021) Evolução das Plantas e Sistemática das Plantas Vasculares. Coleção Botânica em Português I, II e III. Imprensa Nacional Casa da Moeda.

Teaching and learning methods

Theoretical-practices - Methodology actively using the multimedia, texts and question-answer sessions Practical classes - search of plants and animals in the field for laboratory observation. Carrying out practical laboratory

Assessment methods

1. Coursework - (Regular) (Final)
   - Practical Work - 40%
   - Final Written Exam - 60%
2. Worker students examination - (Student Worker) (Final, Supplementary, Special)
   - Final Written Exam - 60%
   - Final Written Exam - 40%
3. Resit examination - (Regular) (Supplementary, Special)

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Assessment methods

- Final Written Exam - 60%
- Final Written Exam - 40%

Language of instruction

Portuguese

Electronic validation

Carlos Francisco Gonçalves Aguiar, Maria José Miranda Arabolaza	Ana Maria Pinto Carvalho	Albino António Bento	Paula Cristina Azevedo Rodrigues
20-12-2022	21-12-2022	21-12-2022	21-12-2022

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