



## Course Unit: 15712 – Environment and Ecology

Year 1 Semester 2 ISCED Code: 712 ECTS: 5,0

**Type of Course Unit:** Compulsory **Delivery Mode:** Face-to-face **Language of Instruction:** Portuguese

**COURSE COORDINATOR:** Nuno Manuel Ramos dos Santos Beja

### HOURS OF WORK

TOTAL HOURS	Contact Hours								Hours in autonomous work
	Theory	Theory and practice	Practical and laboratory work	Field work	Seminar	Internship	Tutorial guidance	Other	
125		45							80

Prerequisites (if applicable):

### LEARNING OUTCOMES (knowledge, skills and competence)

Be knowledgeable in a basic science, which allows students to understand the biophysical system (biotic and abiotic) and allows a better understanding of the scientific knowledge of the different valences of their area of formation;

Understand the concepts of population, community and ecosystem;

Understand the often limiting form, how biotic and abiotic factors act and can condition the life of living beings and populations;

Understand the importance of ecology in the existence and extinction of species;

Be aware of the importance of the balance and resilience of semi-natural, biodiversity-rich ecosystems.

Acquire the capacity, in the professional activity, to be able to integrate teams of work and to elaborate opinions, in the scope of the promotion of a sustainable management of the natural resources.

### CONTENTS

Basics of Ecology and Environment. The ecosystem as the basic unit of Ecology. The organisms and the Environment. Biotic factors and abiotic factors. Populations and population dynamics. Biotic communities: structure and development. Intraspecific and interspecific relations. Ecosystems: structure and functioning. Main terrestrial biomes. Transfer of matter and energy in ecosystems. Trophic ecology. Food chains and food webs. Ecological pyramids. Ecological succession: causes and types.

Human intervention in the dynamics of ecosystems, causing their deregulation, by processes of degradation / pollution.

### DEMONSTRATION OF THE CONTENTS COHERENCE WITH THE COURSE UNIT'S LEARNING OUTCOMES

With the programmatic contents indicated, the student will have a better and easier perception of the importance that the resilience of the ecosystems has, for their balance and, therefore, for the well-being of the human being. Since the ecosystem is the basis for studying Ecology, it is very important, too, that the student perceives all the concepts that the ecosystem concept itself involves. We can say that the syllabus contents are in perfect harmony with the proposed learning objectives. The students begin by learning several Ecology basics for, then, understanding, in more detail, the dynamics of ecosystems, the importance of maintaining their balance, various problems of imbalances, caused by human action, and the sustainable way as the human being should intervene.

### TEACHING METHODOLOGIES

Presentation and interactive classes;

Learning with the practice of research in appropriate bibliography, for the realization and presentation of a work, for example, on

## **DEMONSTRATION OF THE COHERENCE BETWEEN THE TEACHING METHODOLOGIES AND THE LEARNING OUTCOMES**

The teaching methodologies are in coherence with the learning objectives, because, with the teaching of the classes promoting reflection, posing several questions to the students, exemplifying with different cases and forcing the students to carry out a work, on a theme of Ecology, more easily the students perceive and are aware of the importance of Ecology, of the balance in the dynamics of ecosystems and of their preservation and valuation, by human being, as well as of the way human being must act in several situations.

## **EVALUATION METHODS**

The evaluation is done through the delivery and oral presentation, followed by discussion, of a group / individual work and; by performing the Frequency Test (s), or Final Exam (written evaluation elements, individual and without consultation).

## **MAIN BIBLIOGRAPHY**

- Furniss, Michael J.; Staab, Brian P.; Hazelhurst, Sherry; Clifton, Cathrine F.; Roby, Kenneth B.; Ilhadrt, Bonnie L.; Larry, Elizabeth B.; Todd, Albert H.; Reid, Leslie M.; Hines, Sarah J.; Bennett, Karen A.; Luce, Charles H.; Edwards, Pamela J. 2010. Water, climate change, and forests: watershed stewardship for a changing climate. Gen. Tech. Rep. PNW-GTR-812. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station.
- Luce, Charles; Morgan, Penny; Dwire, Kathleen; Isaak, Daniel; Holden, Zachary; Rieman, Bruce. 2012. Climate change, forests, fire, water, and fish: Building resilient landscapes, streams, and managers. Gen. Tech. Rep. RMRS-GTR-290. Fort Collins, CO:  
U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- Molles, Manuel Carl. 2009. Ecology: Concepts and Applications. 5th ed. Boston: McGraw-Hill.
- Odum, Eugene P., and Gary W. Barrett. 2005. Fundamentals of Ecology. 5th ed. Belmont, Calif.: Thomson Brooks

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