School of Agriculture
Course Unit Syllabus

Level of qualification:
Short cycle (TESP)
Study cycle:
Environmental Protection Systems

Course Unit: **223512** – **Ecotoxicology**

Year 1 **Semester 2** **ISCED Code: 511** **ECTS: 4.0**

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

COURSE COORDINATOR: Patrícia Alexandra de Brito Palma

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	
100		**10**	**35**						**55**

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

- Analysis of the impact of pollutants on structure and function in environmental ecosystems (population, community and ecosystem) and in man;

- Acquire knowledge about the main sources of pollution, transport, destination and interaction of environmental chemicals, with the objective of ecotoxicological risk assessment;

- To evaluate the quality of an abiotic environment and the toxic effect of the different chemicals in environmental systems with a view to the balance of ecosystems and the health of populations.

- I acquired knowledge about the use of Bioindicators and Biomarkers in the ecological risk assessment process.

- Promote the use of previously acquired knowledge in solving ecotoxicological problems

CONTENTS

General Ecotoxicology

- Environment and Development / Contamination and Pollution

- Dose-Response Curves

- Chemical pollutants with ecotoxicological effects:

• Pesticides

• Dibenzene-β-Dioxins, Dibenzenofurans, Biphenyl-Polychlorinated Compounds

• Polycyclic Aromatic Hydrocarbons

•Heavy metals

• Atmospheric pollutants

- Accomplishment of acute, subchronic and chronic ecotoxicological tests, in several typologies of environmental samples, from an ecological risk assessment perspective.

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

The syllabus allow achieving the learning objectives, since: - It addresses concepts related to the organization of health services in Portugal, as well as the methodologies used by health authorities for preventing disease, improving the physical, mental and environmental health; - It cover concepAs a general objective of the curricular unit students should acquire skills on the mechanisms of action and toxic effects of various classes of environmental contaminants on living organisms. These valences

are acquired by the theoretical component that integrates three main knowledge modules: (i) general principles of toxicology; (ii) mechanisms of toxicity; (iii) the third module integrates knowledge learning abots and contents about sanitation, and environmental and social diseases; - Allow the student to interpret the legislation of water, waste, air and soil in the perspective of the health community; - It addresses concepts of environmental education programs and their implementation.

TEACHING METHODOLOGIES

The teaching methodology includes of explanation of the fundamental concepts of the courses; and theoretical and practical. The teaching methods include lectures to make use of a strategy of interpretive and interactive exhibition of the concepts in which students are involved and applied analysis of case study. Practical lessons that use laboratory practice of development ecotoxicological bioassays. These types of lessons are consistent with the objectives of the course which aimed to enable students to understand, describe and relate knowledge about the identification and evaluation of ecotoxicological effects induced by environmental pollutants. asses of resolution and discussion of case-studies inherent to epidemiology, environmental risk assessment and environmental health.

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

The teaching methods include lectures to make use of a strategy of interpretive and interactive exhibition of the concepts in which students are involved and applied analysis of case study. Practical lessons that use laboratory practice of development ecotoxicological bioassays. These types of lessons are consistent with the objectives of the course which aimed to enable students to understand, describe and relate knowledge about the identification and evaluation of ecotoxicological effects induced by environmental pollutants.

EVALUATION METHODS

The Theoretical evaluation is obtained by conducting a written test (70%); the evaluation practice is obtained by integrating reporting of results of the practical classes and by the development of a project in the area of environmental toxicology (30%). The student must be admitted to practice to get the theory test. Note the minimum allowable for each element of assessment is 10 values. The assessment of recovery is through a written test.

MAIN BIBLIOGRAPHY

-Baird, C; 1999. Environmental Chemistry. Eds. W. H. Freeman and Company, 2nd edition, New York.

Grau, M. D. M.; 2003. Toxicología Ambiental. Evaluación de riesgo para la salud humana. McGraw-Hill/ Interamericana de España, S. A. U.; 1th edition

Hallenbeck, W. H.; 2000. Quantitative Risk Assessment for Environmental and Occupational Health. Lewis Publishers, 2nd edition.

Klaassen, C. D.; 2001. Cassaret & Douglas Toxicology: The basic science of poisons. McGraw-Hill, 6th edition.

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