School of Agriculture
Course Unit Syllabus

Level of qualification:
First cycle (EQF level 6) - Bachelor
Study cycle:
Bioanalytical Technologies

Course Unit: **15720 – Quality control of drinking water**

Year 2 **Semester 3** **ISCED Code: 712** **ECTS: 6,0**

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

COURSE COORDINATOR: Maria de Fátima Nunes de Carvalho

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	
150	**30**		**45**						**75**

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

Provide students with competencies in the area of Quality Control of Consumption Waters, showing the main tools and methodologies available.

At the end of the course unit the student should acquire knowledge about:

- Water quality standards for the production of drinking water.
- Drinking water quality standards
- Analytical methods used in the physical-chemical characterization of drinking water.
- To carry out laboratory tests of physico-chemical characterization of drinking water.

CONTENTS

Water quality according to its origins

1.1. Water quality standard for the production of water for human consumption

1.2. Analytical reference method used to control the quality of water intended for the production of water for human consumption.

2. Quality of water intended for human consumption.

2.1. Public supply system

2.2. Spring water

2.3. Natural mineral water

2.4. Carbonated natural mineral water

3. Laboratory testing of drinking water

3.1. Carry samples

3.1. Parameters organoleptic

3.2. Residual disinfectant

3.3 Alkalinity and hardness

3.4.pH and conductivity

3.5. Chlorophyll

3.6. P and N

Organic matter: COD and TOC

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

This UC has a theoretical, theoretical-practical and practical aspect. Initially, the typical problems inherent in the different types of water used for the production of drinking water and the legal framework will be addressed. Existing legislation and analytical methods of water intended for human consumption whether public or bottled, as well as sampling methodologies, will be addressed. The experimental classes will allow the student to perform the quality control methodologies and to know their theoretical principles, as well as to apply the theoretical concepts in sampling techniques.

TEACHING METHODOLOGIES

Lectures (using audio visual means), resolution of exercises, laboratory classes, group work, study visit to perform sampling in real context.

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

he lectures allow the conciseness of the necessary information to the students, which can and should be completed / complemented by an individual research by the student, guided by the teacher.

The resolution of exercises allows to apply the theoretical concepts to real situations, allowing the consolidation of knowledge and the development of the critical spirit of the students.

The study visits will serve as real laboratory in performing water samplings and as a form of motivation.

The laboratory classes will allow the students to apply and consolidate the theoretical concepts and theoretical-practical acquired, develop the ability to handle material as well as criticizing the results obtained.

EVALUATION METHODS

Assessment: The final grade will be calculated with a calculation formula in which each of the components will have a weighting to be agreed between the teacher and the students.

MAIN BIBLIOGRAPHY

Rodier, J. (1989). Análisis de las aguas, aguas naturales, aguas residuales, aguas de mar. Ediciones Omega.

Oliveira, J. Mendes, B.. Qualidade da Água para Consumo Humano. Lidel, 2004. ISBN:9789727572748

APHA (2013) Standard Methods for the Examination of Water and Wastewater, 22st Edition, Washington. Bialowiec, A., Davies, L., Albuquerque, A., Randerson, P.F.(2012) Nitrogen removal from landfill leachate in constructed wetlands with reed and willow: redox potential in the rootzone. J Environ Manage, 97, 22–7.

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