School of Agriculture
Course Unit Syllabus

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

Course Unit: **223513** – **Water Treatment System for Consumption**

Year 1 **Semester 2** **ISCED Code: 712** **ECTS: 5.0**

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	
125		**10**	**45**						**70**

Prerequisites (if applicable): Not applicable

LEARNING OUTCOMES (knowledge, skills and competence)

To Know the different origins of Water

To know the main contaminants of the water according to its origin

To Know the legal framework

To Know the main objectives of water treatment systems for different uses

To Know the key parts of a water treatment system and its purpose.

Recognize the treatment system as suitable for the intended purpose of the water quality at source and current legislation.

CONTENTS

- Water quality assessment at source in light of current legislation
- Study of the origin of the contaminants of the waters in the different origins
- Assessment of the health effects of different contaminants in water
- Assessment of water treatment needs in face of their origins:
- Underground Water
- Superficial Water - sea water - rainwater
- Study of the Operations and Unit Processes used in the treatment of water for different uses
- Study of the Treatment Sequences used in the Treatment of water for different uses

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

The student autonomously design a Water Treatment Plant from using actual data and after knowing the current legislation, the water contaminants and the treatment processes.

TEACHING METHODOLOGIES

Realization and defense of an Autonomous Work to solve a real problem, applying the concepts of Unitary Operations in Water Treatment.

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

The students develop a work to design a Water Treatment Plant destined for Human Consumption, applying the theoretical knowledge of operations and Processes used for Water Treatment.

EVALUATION METHODS

Exam and project (Writing and defense)

MAIN BIBLIOGRAPHY

Alves, C. (2005). Tratamento de Águas de Abastecimento. Publindustria. Porto. Brito, A. G.; Oliveira, J.M.; Peixoto, J.M. (2010). "Tratamento de água para consumo humano e Industrial – Elementos teórico- práticos". Publindustria. Porto. Susumu, K. (2000). Integrated Design and Operation of Water Treatment facilities. (2 Ed) Jonh Wiley and Sons, INC.USA. Netto, J.M.A. (1991).

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